University of Texas
Publications

University of Texas Bulletin
No. 2810: March 8, 1928

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By

J. O. MARBERRY, Ph.D.
Professor of Education
Director of the Extension Teaching Bureau
The University of Texas

BUREAU OF SCHOOL INQUIRY
DIVISION OF EXTENSION

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PUBLISHED BY THE UNIVERSITY FOUR TIMES A MONTH, AND ENTERED AS SECOND-CLASS MATTER AT THE POSTOFFICE AT AUSTIN, TEXAS, UNDER THE ACT OF AUGUST 24, 1912

The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.

Sam Houston

Cultivated mind is the guardian genius of democracy. . . . It is the only dictator that freemen acknowledge and the only security that freemen desire.

Mirabeau B. Lamar

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FOREWORD

One important function of a Division of Extension is to make available to the public the results of investigation, particularly if the results are of a practical sort and therefore of immediate service. The Division of Extension of the University of Texas has, from time to time, published such results.

It is believed that the study presented in this bulletin is a real contribution to professional literature in the field of School Administration and that it will serve administrators in a practical way in the study of their administrative problems. It should be of particular interest to classes in educational administration, especially from the standpoint of technique.

T. H. SHELBY,
Dean of Extension.

University of Texas.

INTRODUCTION

In some communities the administration of public education is divided between a superintendent of schools whose duties are designated as educational and a business manager whose obligations are described as those pertaining to business. Such separation of the administrative functions has resulted in much dispute over the jurisdiction of various officers, and in some instances decidedly undesirable personal relations between administrative officers of local systems of public education have resulted. Business managers on the one hand have decried the business ability of superintendents of schools. On the other hand, superintendents of schools have denounced business managers as non-educational in their philosophy and hence in their work. The relative desirability of a particular form of administrative organization must be determined by the efficacy with which administrative functions are discharged.

In the following study, Dr. Marberry has attempted to determine the effect of the form of organization of a local school system on the administration of that particular school unit. This investigation should be of much help to boards of education, superintendents of schools, and students of administration desiring to choose the form of local school organization that will produce the best results for the greatest number. The study presents an incontrovertible argument for the centralization of the administration of public education in local communities in one office. It is a pleasure to recommend this study to all interested in the administration of public education.

JOHN GUY FOWLKES,
Professor of Education.

University of Wisconsin.

PREFACE

The people of the United States are committed to the policy of supporting the public schools. Generally speaking, this support is liberal. People are coming more and more to realize that the great progress that has been made in the arts and sciences of the last century is due to the work of the public schools. It is likewise realized that the future welfare of the country is dependent largely upon the way in which public education functions.

Expenditures for public education in the cities of the United States approximate 2 per cent of the total income of the people of these cities and in these cities approximately two-fifths of the total expenditures are for public education.

Serious attention is being given to the various problems of public school administration. Studies are appearing in increasing number regarding the types of school districts, the authority of boards of education under these types, the relation of the superintendent of schools to the boards of education, and the way in which these matters relate to educational efficiency.

Public school districts are not organized on a uniform basis. These organizations vary widely in different sections of the country and as widely in a given section. The relation that school districts bear to the political unit, such as the municipality, the town, or the county, is of great importance. Whether the administration of education is centralized in the superintendent's office or divided between the superintendent and a business manager, each responsible directly to the board of education, is of great significance.

And yet the type of district and the kind of organization of administration may become of minor importance if excellent results are obtained. The taxpayers wish efficiency in school administration. The school pupils deserve the best opportunity possible to reap the greatest degree of profit from the years spent in getting an education. The teachers, principals, and supervisors should have desirable conditions

under which to do their work. When we consider that approximately 25 per cent of our total population is engaged in attending or teaching or supervisiong and administering the public schools and that another substantial percentage is directly and definitely interested in what these schools are doing, then it is that the enormity of the problem impresses us.

This study was undertaken with the hope that something might be contributed to the important problem of public school administration. The scope of study is confined to cities within definite limits of population. Comparison is made with other studies that relate to types of school districts, but the study centers on the centralized and coördinated types of administration.

The writer is indebted to his major professor, Dr. John Guy Fowlkes, School of Education, University of Wisconsin, for counsel and guidance that made the study pleasurable and profitable. This thesis was offered in partial fulfillment of the requirements for the degree of doctor of philosophy of the University of Wisconsin in 1926.

J. O. MARBERRY.

CHAPTER I

INTRODUCTION

The City Superintendent of Schools: The primitive public school in America was the district school. A board of directors was authorized by law to organize, support, and direct the school, but the board members could not do the teaching and the fact should not be overlooked that the teacher by virtue of his peculiar ability and responsibilities came into certain inherent rights.

Two or more teachers in the same building with different grades resulted in the appointment of a principal whose duties extended to supervision by the very nature of his work. His authority may have been quite limited at first but there developed in his office further inherent rights and privileges.

Two or more buildings with a system of grading and promoting pupils led naturally to the office of supervising principal or superintendent of schools. As the system grew, it became necessary to have this superintendent give his entire time to the work of supervision. It also became necessary for the board of education to exercise care in the selection of this individual.

Gradually, boards of education tended more and more to delegate to the superintendent such powers and duties as the recommendation of teachers, the planning and executing of the course of study, and the selection of the materials of instruction. Again we see the tendency toward certain rights and privileges inherent in the office of the superintendent.

Before the close of the nineteenth century, this initiative was conferred by statute upon the superintendent, and, in a few of the larger cities, this initiative was given the final touch of authority, the last step in the evolutionary process of supervision.[1]

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[1]E. E. White: *National Education Association Proceedings*, 1899, p. 314.

According to Cubberley,[2] who quotes from a report of U. S. Commissioner of Education William T. Harris, there were the following regularly employed superintendents of schools in cities previous to the Civil War:

Buffalo, N.Y.	1837
Louisville, Ky.	1837
Providence, R.I.	1839
Springfield, Mass.	1840
New Orleans, La.	1841
Rochester, N.Y.	1843
Columbus, Ohio	1847
Syracuse, N.Y.	1848
Baltimore, Md.	1849
Cincinnati, Ohio	1850
Boston, Mass.	1851
Gloucester, Mass.	1851
New York City, N.Y.	1851
San Francisco, Calif.	1852
Jersey City, N.J.	1852
Newark, N.J.	1853
Brooklyn, N.Y.	1853
Cleveland, Ohio	1853
Chicago, Ill.	1854
St. Louis, Mo.	1854
St. Joseph, Mo.	1854
Indianapolis, Ind.	1855
Worcester, Mass.	1855
Milwaukee, Wis.	1859

In general, the smaller the city, the more tendency there is to keep the supervision of the schools under the direct control of the board of education. This doubtless has its basis in the good American principle of representative government. The question involved is one of direct responsibility of a board of education in its relation to the people as measured against the highest efficiency of the superintendency in its service to the people.

According to the above table, the first city superintendents were elected in Buffalo, N. Y. and Louisville, Ky., in

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[2]E. P. Cubberley: *Public School Administration*, p. 58.

1837. According to the Federal census of 1920, there were 946 cities in the United States with 8,000 or more population, and the employment of the superintendent of schools became universal.

One may gain some idea of the development of the superintendency during this span of less than a century by considering a few of the statements of educational leaders during this period.

Superintendent Aaron Gove, District No. 1, Denver, Colo., delivered an address at the meeting of the National Education Association in 1900 on "The Trail of the City Superintendent."[3] He spoke, in part, as follows:

> To follow the trail of the city superintendent tramping backward is not difficult, but the traces are faint when one reaches the beginnings, sixty years ago. A little path had its origin about 1839 at Providence, R.I., upon which traveled Nathan Bishop. Another path that helped to mark the road more plainly started with Professor S. S. Greene, at Springfield, Mass., in 1840. Later, in 1847, the main trail was joined by one from Columbus, Ohio, where Dr. A. D. Lord was made the first city superintendent of schools in that state. The same year, Rickoff, at Portsmouth, and Leggett, at Akron, joined the party. . . .
>
> The trail of the city superintendent has been followed persistently during the sixty years by very few pilgrims; of the hundreds that have struck it, most have left it for another prospect. The roll of the names is short. Among the 625 city superintendents today on the trail, from cities of 8,000 or more people, are men and women of all ages and colors, and of such varied antecedents as to preclude a reference to them as a profession.

Commissioner of Education John Eaton, Jr., in his report of 1870 gave a summary of a series of questions sent out to superintendents relative to the need of better supervision. The following digest of these reports gives some idea of the conditions the superintendents of that time confronted:

> New Haven, Conn. The secretary of the board of education attended to financial matters and so far as these duties belonged to the superintendent, he was regarded as an assistant to the superintendent.

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[3] *National Education Association Proceedings*, 1900, p. 214.

Boston, Mass. An officer of the city council—superintendent of public buildings—looked after the school buildings: erection, maintenance, janitors, etc. The superintendent had no control over this officer and his clerks.

Worcester, Mass. The secretary of the board of education was assistant superintendent and this was reported as satisfactory.

Albany, N.Y. The superintendent had no assistant and reported that he felt the need of a clerk.

New York City, N.Y. The superintendent reported that he had two clerks and four assistants, two for the grammar grades and two for the primary grades, and said that this force was inadequate.

Brooklyn, N.Y. One assistant superintendent, a secretary, two clerks, and a messenger were reported as inadequate for proper supervision.

Syracuse, N.Y. The superintendent said, "I ought to have a superintendent of buildings so that I might be relieved of everything pertaining to repairs, fixtures, etc."

Buffalo, N.Y. There were 42 schools, 338 teachers, and 15,000 pupils at the time of the report. The superintendent had one clerk.

Cleveland, Ohio. The year before, the superintendent had four assistants who acted as principals of districts, but this number had been reduced to three and this was reported as quite satisfactory.

Cincinnati, Ohio. The superintendent suggested the need of one English and one German assistant superintendent.

Newport, R. I. The superintendent had no assistance of any kind and made no recommendation.

In 1884, Superintendent Gove, of Denver, made a report as chairman of a committee of the National Council of Education on *City School Systems*.[4] That part of the report relating to the superintendent of schools is summarized briefly:

1. He is the executive officer of the board of education in all particulars as required by the rules of the board.
2. He is director in the department of instruction under the course of study prescribed.

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[4]*National Education Association Proceedings*, 1884, p. 19 of the Supplement.

3. It is generally required that he shall act as counselor of the board in all matters submitted to him by the board or its committees.

The report of the Commissioner of Education in 1880[5] states that Philadelphia was the only large city not employing a superintendent of schools and gave the argument of economy in school administration as a reason for such employment.

> The employment of superintendents by so large a majority of the cities indicates the general agreement as to the necessity of the office. . . . When it is considered further that in all human affairs returns from investments increase in proportion to the wisdom, skill, and integrity with which the affairs are systematized and controlled, an argument for the immediate employment of superintendents may be based on the score of economy.

The following tribute to the superintendent would doubtless be accepted today as worthy of emulation:

> The range of the powers and duties of a superintendent is widely extended, yet limited. His own good sense is the boundary of his actions. He is a teacher and at the same time a thorough man of business—a plain, straightforward man, candid, conciliatory, outspoken, yet a keeper of his own counsels, and inflexible in his purposes. A man with a big heart, yet oftentimes his actions will appear to the community cruel, heartless. A man who could give the fullest and most satisfactory explanation of his conduct, and the most valid reasons for his acts, but on account of the general good he is silent. The teacher's true friend, in her absence; in her presence, often her apparent enemy. As the manager of finance, shrewd, economical, and liberal; as the superintendent of instruction, scholarly, judicious, systematic, and comprehensive; and as a politician, discreet, active and patriotic."[6]

Another report[7] calls attention to two distinct duties of a superintendent; one to the board, the other to the schools.

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[5]Report of the Commissioner of Education, 1880, p. LXXXIII.

[6]R. W. Stevenson: "City and Town Supervision of Schools" in *National Education Association Proceedings*, 1884, p. 283.

[7]*National Education Association Proceedings*, 1884, p. 26.

The report states the need of ability on the part of the superintendent to know the financial condition of his district, to understand the arrangement, construction, and care of school houses, to be ready at all times to advise in matters of expenditures, and to show a willingness to keep the board informed as to the conduct of the schools.

An editorial[8] in one of the educational magazines of the early nineties had this to say relative to the eligibility of a man for a city superintendency:

> Just as nearly as one man can do so, the superintendent represents the educational status of the place. A stream never rises higher than its source, and a school will occupy about the same place in the public estimation that the superintendent does in his profession. Exceptions to this may exist, but they are rare.

Another editorial in the same journal,[9] after deploring the "lamentable fact that in so many of our cities the election of school superintendents rests largely upon political affiliations," gave this advice:

> Select a man for your superintendent who is a representative educator, who has executive ability, a high standing as a citizen, and who will command the respect of educators with whom he must necessarily come in contact.

Another excerpt from the discussion of a quarter of a century ago regarding the superintendency is the following:[10]

> The public schools belong to the people and the people belong to the politicians; therefore, the complete divorcement of the schools from politics would seem to be well-nigh impossible in this country. . . . Obviously this can be done only by a centralization of authority in the superintendent of schools. . . . If

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[8]"Election of Superintendents," *American School Board Journal*, Vol. V, No. 1, January, 1893.

[9]"School Boards and Superintendents," *American School Board Journal*, Vol. IV, No. 2, February, 1892.

[10]Truman A. DeWeese: "Better City School Administration," *Educational Review*, Vol. 20, p. 62.

> he cannot be the directing force behind the educational machinery of the schools he certainly cannot be held responsible for results.

Another brief reference to the early history of the development of the superintendency is found in the Proceedings of the National Education Association of 1894.[11] Henry P. Emerson delivered an address on "Improvement of City School Systems" in which he said:

> Buffalo was organized as a city in 1832. . . .
> In the year 1837, after much agitation and many public meetings, the schools were reorganized and the office of superintendent of schools was created. This new officer was appointed by the common council. A committee of the common council took the place of a board of education.

In the Proceedings of the National Education Association of 1895 is found the report of the Committee of 15.[12] One of the sub-committees had to do with the organization of city school systems, and this report was read by President Draper of the University of Illinois. "Two branches and sets of powers in the board of education" was recommended and this was based upon a plan that had been in operation in the Cleveland, Ohio, schools for three years.

Under this plan a school director should be appointed to give his entire time to the duties of his office and to be duly compensated. This director should assume control of all business affairs of the board of education and should have the power of veto over the legislation of the board. It was further recommended that "The superintendent of instruction should be charged with no duty save the supervision of instruction, but should be charged with the responsibility of making that professional and scientific, and should be given the position and authority to accomplish that end."

Another committee report in the National Education Association is found in the Proceedings of 1917[13] on "Boards

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[11]*National Education Association Proceedings*, 1894, p. 122.
[12]*Ibid.*, 1895, p. 375.
[13]*National Education Association Proceedings*, 1917.

of Education and Superintendents." That part of the report that pertains to this study follows:

> 8. In the performance of these functions, the superintendent has a right to the initiative in technical matters. Specifically, he should have the sole right to perform the following: (a) Recommend all teachers, all officers of supervision, and all janitors and clerks; (b) work out the course of study with the coöperation of the other officers of instruction; (c) select textbooks with the same coöperation; (d) have a determining voice in matters of building and equipment; and (e) draw up the annual budget.
>
> These technical recommendations should always be reviewed by the board, and the approval of the board should be a necessary step for final enactment. This will insure the careful preparation of reports and the careful study of results. The superintendent is not to be authorized to conduct the system apart from the board, but he should be insured by definite forms of organization against interference which will defeat his plans and divide his responsibility. . . .

At the 1925 meeting of the National Education Association, Payson Smith, State Commissioner of Education of Massachusetts, delivered an address on "What Progress Has Superintendence Made?"[14] Two brief references are given here from his address to indicate a condition at the beginning of the superintendency in this country and the condition prevailing at the present time:

> The movement from lay supervision to professional supervision began in 1836 when a superintendent was appointed from the school committee of Cambridge at a salary of $250. . . .
>
> According to the last director of the Federal Bureau of Education, there are at the present time 6,568 persons serving as superintendents of schools in the cities, counties, districts, and supervisory unions of this country.

The above citations are sufficient to give some idea of the evolution of the superintendency in this country. It will be noted that reference is also made in some of these excerpts to the business manager. There has not always

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[14]*National Education Association Proceedings*, 1925, p. 670.

been agreement among school authorities as to the division of powers and duties in the functions of administration of public education. However, the claims of the business manager are more specifically given in the next section.

The Business Manager.—In May, 1925, the fourteenth annual meeting of the National Association of Public School Business Officials was held at Kansas City, Mo.[15] Quotation is made at length from two of the addresses delivered at this meeting in order to set forth the case of the business manager.

One of the addresses was delivered by the Secretary of the Board of Education at Kansas City, Kan. The school in Kansas City, Kan., is coördinated. The Secretary, George A. Widder, in speaking of the type of man that should fill the position of business manager said:

> Men filling such positions must have good moral courage and ability in preparing a plan so that each taxpayer's child will receive, in an educational way, if possible, 100 cents on the dollar.

In reference to the welfare of the public and the standards of education, he continued:

> One of the greatest assets of a well-formulated business department is to see that the public is sold and informed on its plan of efficiency which should be operated without effecting or lowering the school standards.
>
> It is not only fair to advertise or publish these facts to the public, but it is a keen weapon to use on political bosses, who in so many cities prey upon the school system for selfish reasons and personal gain. Boards of education are elected by the people, and by keeping school administrations clean and above board, you are likely to keep an efficient business manager or one who is responsible to your administration for results of the best nature.

The place of the business manager in the school system is stated thus:

> The relation of business manager to the superintendent of schools and superintendent of buildings and grounds is an important one and should not be treated too lightly. Coöperation

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[15]Proceedings of the Fourteenth Annual Meeting of the National Association of Public School Business Officials, Kansas City, Mo., 1925.

between all departments should be the aim, and frequent advisory meetings would not be out of place.

The other address, from which extensive quotation is made, is specific in its nature and was delivered by Herbert N. Morse, Business Manager of the Department of Public Instruction of the State of New Jersey.

After reviewing the functions of administration of business matters in education from the State office, he continued:

Boards of education in our state are the representatives of the people, and the school districts are separate and apart from the politically-governed municipality. Secretaries, superintendents, and business managers are elected by the boards and are their employees.

Do not overlook the fact that there are superintendents of schools who are skilled, through professional training and practice, in executive administrative ability, which attracts the busy business man, who happens to be a member of the board, to take and follow his advice in all matters of public school management, including the board's guidance of your own work. These men are few, but steadily increasing in numbers. They now command from $10,000 to $12,000 per year and states and cities are bidding for them. It is a pleasure to work with, or even under, one of these real executives, for they are real, live, human beings, and they are big men, always looking after your interests. I do not refer to the small man who, for some reason, lands a big job and thinks he is big. He only thinks of himself and of his own interests. The fellow who thinks he should be the "whole show" should have the board legislated out of office and endeavor to be elected by the people, and be responsible to them for his acts.

During the past several years we have read much about the superintendent of schools in relation to the business manager in school systems, where each official is directly responsible to the board of education. At the 1925 Cincinnati meeting of the Department of Superintendence, a teachers' college professor of administration delivered, among other items, the following comment:

"The business manager of schools in a large city bought chairs for the kindergarten which were uncomfortable, unhygienic, and structurally unsatisfactory. When his attention was called to the fact that the superintendent of schools and the director of kindergartens preferred a better, more hygienic, more comfortable

piece of furniture, he proposed that if those charged with the responsibility of developing the work of the kindergartens did not like the chairs he purchased, the children could sit on the floor. The business manager of this school system was responsible to the board of education. He felt that his success depended upon buying the cheapest article available. The physical well-being of kindergarten children did not enter into his calculations. But the adequate development of an educational program requires that all business activities, whether they have to do with the buying of furniture and supplies, the planning and construction of buildings, or the development of an adequate system of accounting and budgeting, be subordinated to the development of an efficient program of education."

You will note that "this business manager was responsible only to the board of education." Well—who is this board of education which these professional teachers talk about once in a great while? As I have said, they represent the people, and in New Jersey they are still the "main show." I admit that there seems to be something wrong, in the instance cited, with the board's responsibility to the children, but perhaps we do not have the full story. If I had the authority of a board to select school furniture, I would ask for the specifications from the educational expert, but perhaps in this case the board did not trust its educational expert or did not have the money to meet his full ideal.

I know of a little matter of a board wasting over $500,000 of the people's money in inaugurating and carrying on a certain type of schools on the recommendation of its educational expert, to the end that he admitted that they were a failure. . . .

Here is the creed of a few superintendents: "I believe that business managers should not be coördinate with superintendents of schools. The schools are established to educate children and every activity in the school system should be bent to that purpose. The business manager should be able to furnish the superintendent of schools with advice because of his technical knowledge of various kinds, but he should be subordinate to the superintendent." This was written by the superintendent who made the $500,000 failure. And yet, the business manager should be subordinated to the authority of the board's educational expert.

Again I say there must be a proper coöperation between the board and all of its employees. If the superintendent of schools persists in making a study of the business affairs of the board and the secretary and business manager do not improve their knowledge of the advancing educational needs of the system, you know what will eventually be the answer. From personal observation I would say the best results are obtained in not

leaving the business manager or secretary responsible to the city superintendents.

At St. Louis, in 1923, as your president, I made a few remarks which should not be laid aside without thorough consideration and a determination to put them into effect. I will read these remarks:

"(7) Your attention is called to the propaganda of the city superintendents in their desire to be the full-fledged dictators in the school systems in which they are engaged to devote their time to supervising the teaching of the children. The educational programs must necessarily originate with these professionally trained experts and boards look to them for advice, in educational matters. The secretary of the board must be efficiently trained in school finance, school building construction and operation, statistical research and reporting, purchasing, and general management of a school system. In all cases the secretary and the superintendent must coöperate to secure the best results in educating our children, but be sure you are the master of the job."

The tone of Mr. Morse's address is controversial in nature but he stated some of the important claims of the wisdom of having the coördinated type of administration. The purpose of this part of the study is fulfilled in presenting the above quotations.

The Problem.—If all administration in a city school system is centered in the superintendent's office, that is, if the business manager or secretary as well as the assistant superintendent, supervisors, principals, teachers, and other employees are recommended for appointment by the superintendent and responsible to him, and if such functions as preparation of the budget, transfer, or dismissal of principals and teachers as well as other employees, taking the census, enforcing compulsory attendance, determining the curricula, inaugurating new policies, supervising instruction, etc., are initiated or executed by the superintendent, then it may be said that the administration is *centralized* in the superintendent's office.

On the other hand, if the business manager or secretary, or the superintendent of buildings and grounds is appointed directly by the board of education without the recommendation of the superintendent of schools and if such official

is responsible, not to the superintendent but directly to the board of education, and if the functions of administration are divided between this official and the superintendent, the administration is not centralized in the superintendent's office but the type of organization is *coördinated.*

This study was undertaken to determine the efficiency of administration in *centralized* and *coördinated* types and to measure the degree of difference, if any, between these types.

Should all administrative authority be centralized in the office of superintendent of schools? Is this a better type of organization than the coördinated plan? Is it possible to measure the efficiency of each of these types of organization? Can a relative comparison of these two types be determined scientifically?

There exists in the minds of many school men the conviction that greater service is rendered by the centralized type of school. The assumption may be the natural result of the superintendent's duties and responsibilities. These duties and responsibilities are matters of grave importance. The real superintendent, one who is thoroughly trained, academically as well as professionally, and who possesses rare skill and judgment in the execution of administrative affairs may feel that all authority should center in his office.

What are the facts? Can these facts be determined scientifically? Is it possible to determine a measure or measures whereby the efficiency of one type of organization may be compared with the efficiency of the other type? This thesis was undertaken to set up such measures and to state definitely the results.

There is one indisputable fact. The tendency for many years has been in the direction of centralization. As shown later, 206 cities between 30,000 and 250,000 population are included in the study. More than two-thirds of these are centralized.

The problem was approached from two different angles. An index number made up of four educational and four financial indices is based upon certain data taken from a Bureau of Education bulletin for the school year

1921–1922. Another measure is based upon the ordinary functions of public school administration. These two measures are explained in detail later.

There are several by-products of the study. An attempt is made to trace briefly the evolution of the superintendency as well as to describe the work of the business manager as stated above. In order to bring out some of the problems involved in the two kinds of organization, these chapters give the opinion of representative leaders in the two types of schools. Other sidelights, as the growth of cities of the size contained in the study, graphs showing single indices, etc., are given.

Comparison is made between this study and two other studies in the general field of fiscal administration of city schools. In 1922, G. W. Frasier published his study on *The Control of City School Finances* (Bruce Publishing Company). J. R. McGaughey is the author of *The Fiscal Administration of City School Systems* which was published as Vol. V of the Publications of the Educational Finance Inquiry under the auspices of the American Council on Education, Washington, D.C.

For the purpose of comparison with Frasier and McGaughey, the questionnaire asked for information regarding independent, dependent, and partially dependent city school districts. These are classified and the cities contained in the studies of Frasier and McGaughey are listed with those of this study.

The three principal sources of data.—There are three principal sources of data. The first is Bureau of Education Bulletin, 1924, No. 34, from which the index number is derived. The second is *The First Year Book* of the Department of Superintendence of the National Education Association. This Year Book appeared in 1923 and contains a study on "The Status of the Superintendent." The third source of data is a questionnaire sent to superintendents in the 229 public school districts of the 223 cities in the study.

The collection of data.—In order to include a city school district in the study, it was necessary to have complete data from the Bureau of Education Bulletin for the index

number. It was also necessary to have the questionnaire concerning The Functions of Administration filled out and returned.

The Bureau of Education Bulletin, 1924, No. 34, gives data for the school year 1921–1922. This bulletin is incomplete in the data for several cities. Letters were sent to the superintendents of these cities for data relative to 1921–1922 and replies were received from a majority. For some of the cities whose superintendents did not reply, it was possible to use data from other years as shown in Table II. This was deemed more advisable than to exclude these cities from the study.

In this way, complete data were calculated for 225 of the 229 districts of the 223 cities. A total of 210 replies was received on the questionnaire but two of these were received too late to be included in the study and two had incomplete data on the index number. This made a net total of 206 districts included in the study.

Ninety per cent of the 229 school districts in the 223 cities are included in the study. The showing for the population is virtually the same. The total population of these 223 cities, according to the census of 1920, is 15,804,415. The total population included in the study is 14,273,371, a percentage of 90.3. Pueblo, Colo., consists of two districts, No. 1 and No. 20. No reply regarding the questionnaire was received from District No. 1 and one-half of the population of that city was included in the above totals for District No. 20.

Classification of cities.—According to the Federal Census of 1920, there were 946 cities in the United States with 8,000 or more population. This study is limited to those cities having a population of 30,000 to 250,000. There are 223 of these cities.

No attempt, therefore, is made to go into problems of city school administration in cities having less than 30,000 population nor in those of more than 250,000 population. The minimum of 30,000 has no particular significance as compared to 20,000 or 25,000 but was chosen because the

Bureau of Education report is tabulated for cities of 30,000 to 100,000, etc.

However, two assumptions were made in selecting the range of population from 30,000 to 250,000. First, it is doubtful if any problems exist, so far as this study is concerned, in cities below 30,000 that are not to be found in the range of those cities in the study. Second, it is doubtful if any contribution would result from including the 25 cities of the United States above 250,000. It is assumed that these cities are rather atypical than typical.

Of the 223 cities in this study, 229 public school districts are represented. The following six cities have two districts each:

Pueblo, Colo.: Districts 1 and 20.
Aurora, Ill.: East and West Side.
Evanston, Ill.: Districts 75 and 76.
Waterloo, Iowa: East and West Side.
Saginaw, Mich.: East and West Side.
Troy, N.Y.: Union and Lansingburg Districts.

In order to make comparison with other studies and to classify the cities for the specific purpose of this study, the following questions were included in the questionnaire sent out:

1. In public school administration, is your school system *wholly independent* of municipal or other authority than the State, or is it *wholly dependent* on other authority, or is it *partially dependent* on other authority?
Check:

a. *Wholly independent* ( )
b. *Wholly dependent* ( )
c. *Partially dependent* ( )

2. Is the authority for all public school administration of your school system *centralized* in the superintendent's office, or is it *coördinated*, that is, with a business manager or other administrative officer coördinate with the superintendent?
Check:

a. *Centralized* ( )
b. *Coördinated* ( )

The following table shows the number and classification of cities of 30,000 to 250,000 in the studies by Frasier and McGaughey and in this study:

TABLE I

CITIES 30,000 TO 250,000 IN THREE STUDIES

Studies	Independent	Dependent	Partially Dependent	Total	Per Cent
Frasier	23	23	9	55	24.0
McGaughey	50	44	21	115	50.2
Marberry	112	18	76	206	90.0

There are 140 *centralized* and 66 *coördinated* schools in this study. These 206 city districts are listed below as Independent-Centralized, Independent-Coördinated, Dependent-Centralized, Dependent-Coördinated, Partially Dependent-Centralized, Partially Dependent-Coördinated.

The Independent-Centralized districts, 74 in number, are:

Alabama: Mobile

Arkansas: Little Rock

California: Berkeley; Fresno; Long Beach; Sacramento; San Jose; Stockton

Georgia: Augusta; Savannah

Illinois: Aurora, East Side; Aurora, West Side; Cicero; Danville; Decatur; Evanston, District 75; Evanston, District 76; Joliet; Moline; Oak Park; Quincy; Rockford; Rock Island; Springfield

Indiana: Fort Wayne; Hammond; South Bend; Terre Haute

Iowa: Cedar Rapids; Des Moines; Sioux City; Waterloo, East Side; Waterloo, West Side

Kansas: Wichita

Louisiana: Shreveport

Massachusetts: Brookline; Cambridge; Newton

Michigan: Battle Creek; Hamtramck; Highland Park; Jackson; Kalamazoo; Lansing; Muskegon

Missouri: Springfield.

Nebraska: Lincoln; Omaha

New Jersey: Atlantic City

New York: Amsterdam; Auburn; Mount Vernon; Troy, Lansingburgh District; Utica

Ohio: Dayton; Lorain

Oklahoma: Oklahoma City; Tulsa

Pennsylvania: Altoona; Chester; Hazelton; Lancaster; Norristown; Wilkes-Barre; York

Rhode Island: Woonsocket
Tennessee: Memphis
Texas: San Antonio; Wichita Falls
Utah: Ogden; Salt Lake City
West Virginia: Charleston; Huntington
Wisconsin: Kenosha

The Independent-Coördinated districts, 38 in number, are:

Colorado: Colorado Springs; Pueblo, District 1
Illinois: East St. Louis; Peoria
Iowa: Council Bluffs; Davenport; Dubuque
Kansas: Kansas City; Topeka
Kentucky: Covington; Lexington
Massachusetts: Lynn
Michigan: Flint; Pontiac; Saginaw, East Side
Minnesota: Duluth
Missouri: St. Joseph
Montana: Butte
New Jersey: East Orange; Hoboken; Perth Amboy
New York: Jamestown
Ohio: Canton; Lakewood; Toledo
Pennsylvania: Allentown; Bethlehem; Easton; Erie; Johnstown; McKeesport; Reading; Scranton; Williamsport
Texas: Fort Worth; Houston
Washington: Spokane
West Virginia: Wheeling

The Dependent-Centralized districts, 11 in number, are:

Connecticut: New Britain; Stamford
Massachusetts: Chicopee; Fall River; Fitchburg
Michigan: Saginaw, West Side
North Carolina: Wilmington
Tennessee: Chattanooga
Virginia: Norfolk; Petersburg
Wisconsin: Oshkosh

The Dependent-Coördinated districts, 7 in number, are:

Connecticut: New Haven
Kentucky: Louisville
Michigan: Grand Rapids
Minnesota: St. Paul
New York: Watertown
Virginia: Richmond
Wisconsin: Madison

The Partially Dependent-Centralized districts, 55 in number, are:

Alabama: Birmingham; Montgomery
California: Oakland; Pasadena; San Diego
Connecticut: Bridgeport; Meriden
Delaware: Wilmington
Florida: Jacksonville; Pensacola; Tampa
Georgia: Atlanta; Columbus
Indiana: Gary, Kokomo
Maine: Lewiston; Portland
Massachusetts: Brockton; Chelsea; Everett; Haverhill; Holyoke; Malden; Medford; New Bedford; Pittsfield; Somerville; Taunton; Waltham
New Jersey: Bayonne; New Brunswick; Trenton
New York: Albany; Binghampton; Elmira; Newburgh; New Rochelle; Niagara Falls; Poughkeepsie; Schenectady; Troy, Union District
Ohio: Akron; Hamilton; Springfield
Oklahoma: Muskogee
Rhode Island: Providence
South Carolina: Charleston
Tennessee: Nashville
Texas: Beaumont; El Paso; Waco
Virginia: Portsmouth
Wisconsin: Green Bay; La Crosse; Sheboygan

The Partially Dependent-Coördinated districts, 21 in number, are:

Connecticut: Hartford
Indiana: East Chicago; Muncie
Massachusetts: Springfield; Worcester
New Jersey: Elizabeth; Passaic; Paterson; West Hoboken
New York: Syracuse; Yonkers
North Carolina: Winston-Salem
Ohio: Lima; Youngstown
Rhode Island: Pawtucket
Tennessee: Knoxville
Texas: Dallas; Galveston
Virginia: Newport News; Roanoke
Wisconsin: Racine

The above classification is given in another form in Table III. The cities are listed by states, alphabetically.

Data from which the Index Numbers Were Computed

All data from which the index numbers were computed are for the school year 1921–1922 except the following. The numbers 1–8 refer to the indexes. An asterisk (*) in a column signifies that that number is given for the year as designated to the right, 1917–1918, 1919–1920, or 1924–1925. A dash (–) signifies that the index is for the year 1921–1922.

TABLE II

City	1	2	3	4	5	6	7	8	1917–1918	1919–1920	1924–1925
Little Rock, Ark.	*	*	*	*	*	–	–	*	–	*	–
Sacramento, Calif.	*	*	*	*	*	*	*	*	–	*	–
Bridgeport, Conn.	*	*	*	*	–	–	–	–	–	*	–
Stamford, Conn.	*	*	*	*	*	*	*	*	–	*	–
Jacksonville, Fla.	*	*	*	*	*	*	*	*	*	–	–
Aurora, Ill., West	*	*	*	*	*	*	*	*	–	*	–
East St. Louis, Ill.	*	*	*	*	*	*	*	*	–	*	–
Hammond, Ind.	*	*	*	*	*	*	*	*	–	*	–
Dubuque, Iowa	–	–	–	–	*	*	*	*	–	*	–
Waterloo, Iowa, East	–	–	–	–	–	*	*	–	*	–	–
Kansas City, Kan.	–	–	–	–	*	*	*	*	–	*	–
Shreveport, La.	*	*	*	*	–	–	–	–	–	*	–
Worcester, Mass.	*	*	*	*	*	*	*	*	–	*	–
Flint, Mich.	–	–	–	–	–	*	*	–	–	*	–
Pontiac, Mich.	*	*	*	*	–	–	–	–	–	*	–
St. Joseph, Mo.	–	–	–	–	*	*	*	*	–	*	–
Butte, Mont.	–	–	–	–	*	*	*	*	–	*	–
Elizabeth, N.J.	–	–	–	–	–	*	*	–	*	–	–
Amsterdam, N.Y.	*	*	*	*	*	*	*	*	–	*	–
Youngstown, Ohio	*	*	*	*	*	*	*	*	–	*	–
Easton, Pa.	*	*	*	*	–	–	–	–	–	*	–
Lancaster, Pa.	*	*	*	*	*	*	*	*	–	*	–
Charleston, S.C.	*	*	*	*	*	*	*	*	–	–	*
Chattanooga, Tenn.	*	*	*	*	*	*	*	*	*	–	–
Memphis, Tenn.	–	–	–	–	–	*	*	–	–	*	–
Houston, Texas	–	–	–	–	–	*	*	*	*	–	–
Ogden, Utah	*	*	*	*	–	–	–	–	–	*	–

TABLE III

THE TYPE OF SCHOOL DISTRICT AND THE AUTHORITY OF THE SUPERINTENDENT

Geographical Grouping of Cities by States	Independent	Dependent	Partially Dependent	Centralized	Coördinated	Independent-Centralized	Dependent-Centralized	Partially Dependent-Centralized	Independent-Coördinated	Dependent-Coördinated	Partially Dependent-Coördinated
labama											
Birmingham	–	–	*	*	–	–	–	*	–	–	–
Mobile	*	–	–	*	–	*	–	–	–	–	–
Montgomery	–	–	*	*	–	–	–	*	–	–	–
rkansas											
Little Rock	*	–	–	*	–	*	–	–	–	–	–
ılifornia											
Berkeley	*	–	–	*	–	*	–	–	–	–	–
Fresno	*	–	–	*	–	*	–	–	–	–	–
Long Beach	*	–	–	*	–	*	–	–	–	–	–
Oakland	–	–	*	*	–	–	–	*	–	–	–
Pasadena	–	–	*	*	–	–	–	*	–	–	–
Sacramento	*	–	–	*	–	*	–	–	–	–	–
San Diego	–	–	*	*	–	–	–	*	–	–	–
San Jose	*	–	–	*	–	*	–	–	–	–	–
Stockton	*	–	–	*	–	*	–	–	–	–	–
ılorado											
Colorado Springs	*	–	–	–	*	–	–	–	*	–	–
Pueblo, Dist. No. 1	*	–	–	–	*	–	–	–	*	–	–
nnecticut											
Bridgeport	–	–	*	*	–	–	–	*	–	–	–
Hartford	–	–	*	–	*	–	–	–	–	–	*
Meriden	–	–	*	*	–	–	–	*	–	–	–
New Britain	–	*	–	*	–	–	*	–	–	–	–
New Haven	–	*	–	–	*	–	–	–	–	*	–
Stamford	–	*	–	*	–	–	*	–	–	–	–
laware											
Wilmington	–	–	*	*	–	–	–	*	–	–	–
orida											
Jacksonville	–	–	*	*	–	–	–	*	–	–	–
Pensacola	–	–	*	*	–	–	–	*	–	–	–
Tampa	–	–	*	*	–	–	–	*	–	–	–
orgia											
Atlanta	–	–	*	*	–	–	–	*	–	–	–
Augusta	*	–	–	*	–	*	–	–	–	–	–
Columbus	–	–	*	*	–	–	–	*	–	–	–
Savannah	*	–	–	*	–	*	–	–	–	–	–
nois											
Aurora, East	*	–	–	*	–	*	–	–	–	–	–
Aurora, West	*	–	–	*	–	*	–	–	–	–	–
Cicero	*	–	–	*	–	*	–	–	–	–	–
Danville	*	–	–	*	–	*	–	–	–	–	–
Decatur	*	–	–	*	–	*	–	–	–	–	–
East St. Louis	*	–	–	–	*	–	–	–	*	–	–
Evanston, Dist. 75	*	–	–	*	–	*	–	–	–	–	–
Evanston, Dist. 76	*	–	–	*	–	*	–	–	–	–	–

Table III (Continued)

Geographical Grouping of Cities by States	Independent	Dependent	Partially Dependent	Centralized	Coördinated	Independent-Centralized	Dependent-Centralized	Partially Dependent-Centralized	Independent-Coördinated	Dependent-Coördinated	Partially Dependent-Coördinated
Joliet	*	–	–	*	–	*	–	–	–	–	–
Moline	*	–	–	*	–	*	–	–	–	–	–
Oak Park	*	–	–	*	–	*	–	–	–	–	–
Peoria	*	–	–	–	*	–	–	–	*	–	–
Quincy	*	–	–	*	–	*	–	–	–	–	–
Rockford	*	–	–	*	–	*	–	–	–	–	–
Rock Island	*	–	–	*	–	*	–	–	–	–	–
Springfield	*	–	–	*	–	*	–	–	–	–	–
Indiana											
East Chicago	–	–	*	–	*	–	–	–	–	–	*
Fort Wayne	*	–	–	*	–	*	–	–	–	–	–
Gary	–	–	*	*	–	–	–	*	–	–	–
Hammond	*	–	–	*	–	*	–	–	–	–	–
Kokomo	–	–	*	*	–	–	–	*	–	–	–
Muncie	–	–	*	–	*	–	–	–	–	–	*
South Bend	*	–	–	*	–	*	–	–	–	–	–
Terre Haute	*	–	–	*	–	*	–	–	–	–	–
Iowa											
Cedar Rapids	*	–	–	*	–	*	–	–	–	–	–
Council Bluffs	*	–	–	–	*	–	–	–	*	–	–
Davenport	*	–	–	–	*	–	–	–	*	–	–
Des Moines	*	–	–	*	–	*	–	–	–	–	–
Dubuque	*	–	–	–	*	–	–	–	*	–	–
Sioux City	*	–	–	*	–	*	–	–	–	–	–
Waterloo, East	*	–	–	*	–	*	–	–	–	–	–
Waterloo, West	*	–	–	*	–	*	–	–	–	–	–
Kansas											
Kansas City	*	–	–	–	*	–	–	–	*	–	–
Topeka	*	–	–	–	*	–	–	–	*	–	–
Wichita	*	–	–	*	–	*	–	–	–	–	–
Kentucky											
Covington	*	–	–	–	*	–	–	–	*	–	–
Lexington	*	–	–	–	*	–	–	–	*	–	–
Louisville	–	*	–	–	*	–	–	–	–	*	–
Louisiana											
Shreveport	*	–	–	*	–	*	–	–	–	–	–
Maine											
Lewiston	–	–	*	*	–	–	–	*	–	–	–
Portland	–	–	*	*	–	–	–	*	–	–	–
Massachusetts											
Brockton	–	–	*	*	–	–	–	*	–	–	–
Brookline	*	–	–	*	–	*	–	–	–	–	–
Cambridge	*	–	–	*	–	*	–	–	–	–	–
Chelsea	–	–	*	*	–	–	–	*	–	–	–
Chicopee	–	*	–	*	–	–	*	–	–	–	–
Everett	–	–	*	*	–	–	–	*	–	–	–
Fall River	–	*	–	*	–	–	*	–	–	–	–
Fitchburg	–	*	–	*	–	–	*	–	–	–	–

Table III (Continued)

Geographical Grouping of Cities by States	Independent	Dependent	Partially Dependent	Centralized	Coördinated	Independent-Centralized	Dependent-Centralized	Partially Dependent-Centralized	Independent-Coördinated	Dependent-Coördinated	Partially Dependent-Coördinated
Haverhill	–	–	*	*	–	–	–	*	–	–	–
Holyoke	–	–	*	*	–	–	–	*	–	–	–
Lynn	*	–	–	–	*	–	–	–	*	–	–
Malden	–	–	*	*	–	–	–	*	–	–	–
Medford	–	–	*	*	–	–	–	*	–	–	–
New Bedford	–	–	*	*	–	–	–	*	–	–	–
Newton	*	–	–	*	–	*	–	–	–	–	–
Pittsfield	–	–	*	*	–	–	–	*	–	–	–
Somerville	–	–	*	*	–	–	–	*	–	–	–
Springfield	–	–	*	–	*	–	–	–	–	–	*
Taunton	–	–	*	*	–	–	–	*	–	–	–
Waltham	–	–	*	*	–	–	–	*	–	–	–
Worcester	–	–	*	–	*	–	–	–	–	–	*
Michigan											
Battle Creek	*	–	–	*	–	*	–	–	–	–	–
Flint	*	–	–	–	*	–	–	–	*	–	–
Grand Rapids	–	*	–	–	*	–	–	–	–	*	–
Hamtramck	*	–	–	*	–	*	–	–	–	–	–
Highland Park	*	–	–	*	–	*	–	–	–	–	–
Jackson	*	–	–	*	–	*	–	–	–	–	–
Kalamazoo	*	–	–	*	–	*	–	–	–	–	–
Lansing	*	–	–	*	–	*	–	–	–	–	–
Muskegon	*	–	–	*	–	*	–	–	–	–	–
Pontiac	*	–	–	–	*	–	–	–	*	–	–
Saginaw, East	*	–	–	–	*	–	–	–	*	–	–
Saginaw, West	–	*	–	*	–	–	*	–	–	–	–
Minnesota											
Duluth	*	–	–	–	*	–	–	–	*	–	–
St. Paul	–	*	–	–	*	–	–	–	–	*	–
Missouri											
St. Joseph	*	–	–	–	*	–	–	–	*	–	–
Springfield	*	–	–	*	–	*	–	–	–	–	–
Montana											
Butte	*	–	–	–	*	–	–	–	*	–	–
Nebraska											
Lincoln	*	–	–	*	–	*	–	–	–	–	–
Omaha	*	–	–	*	–	*	–	–	–	–	–
New Jersey											
Atlantic City	*	–	–	*	–	*	–	–	–	–	–
Bayonne	–	–	*	*	–	–	–	*	–	–	–
East Orange	*	–	–	–	*	–	–	–	*	–	–
Elizabeth	–	–	*	–	*	–	–	–	–	–	*
Hoboken	*	–	–	–	*	–	–	–	*	–	–
New Brunswick	–	–	*	*	–	–	–	*	–	–	–
Passaic	–	–	*	–	*	–	–	–	–	–	*
Paterson	–	–	*	–	*	–	–	–	–	–	*
Perth Amboy	*	–	–	–	*	–	–	–	*	–	–

Table III (Continued)

Geographical Grouping of Cities by States	Independent	Dependent	Partially Dependent	Centralized	Coördinated	Independent-Centralized	Dependent-Centralized	Partially Dependent-Centralized	Independent-Coördinated	Dependent-Coördinated	Partially Dependent-Coördinated
Trenton	–	–	*	*	–	–	–	*	–	–	–
West Hoboken	–	–	*	–	*	–	–	–	–	–	*
New York											
Albany	–	–	*	*	–	–	–	*	–	–	–
Amsterdam	*	–	–	*	–	*	–	–	–	–	–
Auburn	*	–	–	*	–	*	–	–	–	–	–
Binghampton	–	–	*	*	–	–	–	*	–	–	–
Elmira	–	–	*	*	–	–	–	*	–	–	–
Jamestown	*	–	–	–	*	–	–	–	*	–	–
Mount Vernon	*	–	–	*	–	*	–	–	–	–	–
Newburgh	–	–	*	*	–	–	–	*	–	–	–
New Rochelle	–	–	*	*	–	–	–	*	–	–	–
Niagara Falls	–	–	*	*	–	–	–	*	–	–	–
Poughkeepsie	–	–	*	*	–	–	–	*	–	–	–
Schenectady	–	–	*	*	–	–	–	*	–	–	–
Syracuse	–	–	*	–	*	–	–	–	–	–	*
Troy, Lansingb'gh Dist.	*	–	–	*	–	*	–	–	–	–	–
Troy, Union Dist.	–	–	*	*	–	–	–	*	–	–	–
Utica	*	–	–	*	–	*	–	–	–	–	–
Watertown	–	*	–	–	*	–	–	–	–	*	–
Yonkers	–	–	*	–	*	–	–	–	–	–	*
North Carolina											
Wilmington	–	*	–	*	–	–	*	–	–	–	–
Winston Salem	–	–	*	–	*	–	–	–	–	–	*
Ohio											
Akron	–	–	*	*	–	–	–	*	–	–	–
Canton	*	–	–	–	*	–	–	–	*	–	–
Dayton	*	–	–	*	–	*	–	–	–	–	–
Hamilton	–	–	*	*	–	–	–	*	–	–	–
Lakewood	*	–	–	–	*	–	–	–	*	–	–
Lima	–	–	*	–	*	–	–	–	–	–	*
Lorain	*	–	–	*	–	*	–	–	–	–	–
Springfield	–	–	*	*	–	–	–	*	–	–	–
Toledo	*	–	–	–	*	–	–	–	*	–	–
Youngstown	–	–	*	–	*	–	–	–	–	–	*
Oklahoma											
Muskogee	–	–	*	*	–	–	–	*	–	–	–
Oklahoma City	*	–	–	*	–	*	–	–	–	–	–
Tulsa	*	–	–	*	–	*	–	–	–	–	–
Pennsylvania											
Allentown	*	–	–	–	*	–	–	–	*	–	–
Altoona	*	–	–	*	–	*	–	–	–	–	–
Bethlehem	*	–	–	–	*	–	–	–	*	–	–
Chester	*	–	–	*	–	*	–	–	–	–	–
Easton	*	–	–	–	*	–	–	–	*	–	–
Erie	*	–	–	–	*	–	–	–	*	–	–
Hazelton	*	–	–	*	–	*	–	–	–	–	–
Johnstown	*	–	–	–	*	–	–	–	*	–	–
Lancaster	*	–	–	*	–	*	–	–	–	–	–
McKeesport	*	–	–	–	*	–	–	–	*	–	–

Table III (Continued)

Geographical Grouping of Cities by States	Independent	Dependent	Partially Dependent	Centralized	Coördinated	Independent-Centralized	Dependent-Centralized	Partially Dependent-Centralized	Independent-Coördinated	Dependent-Coördinated	Partially Dependent-Coördinated
Norristown	*	–	–	*	–	*	–	–	–	–	–
Reading	*	–	–	*	–	*	–	–	–	–	–
Scranton	*	–	–	–	*	–	–	–	*	–	–
Wilkes-Barre	*	–	–	*	–	*	–	–	–	–	–
Williamsport	*	–	–	–	*	–	–	–	*	–	–
York	*	–	–	*	–	*	–	–	–	–	–
Rhode Island											
Pawtucket	–	–	*	–	*	–	–	–	–	–	*
Providence	–	–	*	*	–	–	–	*	–	–	–
Woonsocket	*	–	–	*	–	*	–	–	–	–	–
South Carolina											
Charleston	–	–	*	*	–	–	–	*	–	–	–
Tennessee											
Chattanooga	–	*	–	*	–	–	*	–	–	–	–
Knoxville	–	–	*	–	*	–	–	–	–	–	*
Memphis	*	–	–	*	–	*	–	–	–	–	–
Nashville	–	–	*	*	–	–	–	*	–	–	–
Texas											
Beaumont	*	–	–	*	–	*	–	–	–	–	–
Dallas	–	–	*	–	*	–	–	–	–	–	*
El Paso	–	–	*	*	–	–	–	*	–	–	–
Fort Worth	*	–	–	–	*	–	–	–	*	–	–
Galveston	–	–	*	–	*	–	–	–	–	–	*
Houston	*	–	–	–	*	–	–	–	*	–	–
San Antonio	*	–	–	*	–	*	–	–	–	–	–
Waco	–	–	*	*	–	–	–	*	–	–	–
Wichita Falls	*	–	–	*	–	*	–	–	–	–	–
Utah											
Ogden	*	–	–	*	–	*	–	–	–	–	–
Salt Lake City	*	–	–	*	–	*	–	–	–	–	–
Virginia											
Newport News	–	–	*	–	*	–	–	–	–	–	*
Norfolk	–	*	–	*	–	–	*	–	–	–	–
Petersburg	–	*	–	*	–	–	*	–	–	–	–
Portsmouth	–	–	*	*	–	–	–	*	–	–	–
Richmond	–	*	–	–	*	–	–	–	–	*	–
Roanoke	–	–	*	–	*	–	–	–	–	–	*
Washington											
Spokane	*	–	–	–	*	–	–	–	*	–	–
West Virginia											
Charleston	*	–	–	*	–	*	–	–	–	–	–
Huntington	*	–	–	*	–	*	–	–	–	–	–
Wheeling	*	–	–	–	*	–	–	–	*	–	–
Wisconsin											
Green Bay	–	–	*	*	–	–	–	*	–	–	–
Kenosha	*	–	–	*	–	*	–	–	–	–	–
La Crosse	–	–	*	*	–	–	–	*	–	–	–
Madison	–	*	–	–	*	–	–	–	–	*	–
Oshkosh	–	*	–	*	–	–	*	–	–	–	–
Racine	–	–	*	–	*	–	–	–	–	–	*
Sheboygan	–	–	*	*	–	–	–	*	–	–	–

Distribution of the Cities

The geographical distribution of the cities in the study was made as follows:

Eastern: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

Southern: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Great Lakes: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

Great Plains: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, and South Dakota.

Western: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Cities were arranged in two groups according to size. Class I includes cities from 30,000 to 70,000 and Class II includes cities from 70,000 to 250,000. Problems of administration may be different in a city of 50,000, for example, as compared with the problems that exist in a city of 200,000. This arrangement into two classes makes it possible to compare the two groups under the two measures used.

The most important element in the distribution of the cities is the division into the two groups—*Centralized* and *Coördinated.* This is the basis upon which the study was made.

Table I above shows the division of cities into Independent, Dependent, and Partially Dependent, and how these divisions in this study compare with the studies of Frasier and McGaughey. Table IV gives the grouping of this division by geographical divisions and by size, Class I and Class II. Table V gives the same grouping for the Centralized and Coördinated districts.

Several of the states do not have cities with population between 30,000 and 250,000. Map One shows the states with the number of cities in the range of the study.

TABLE IV

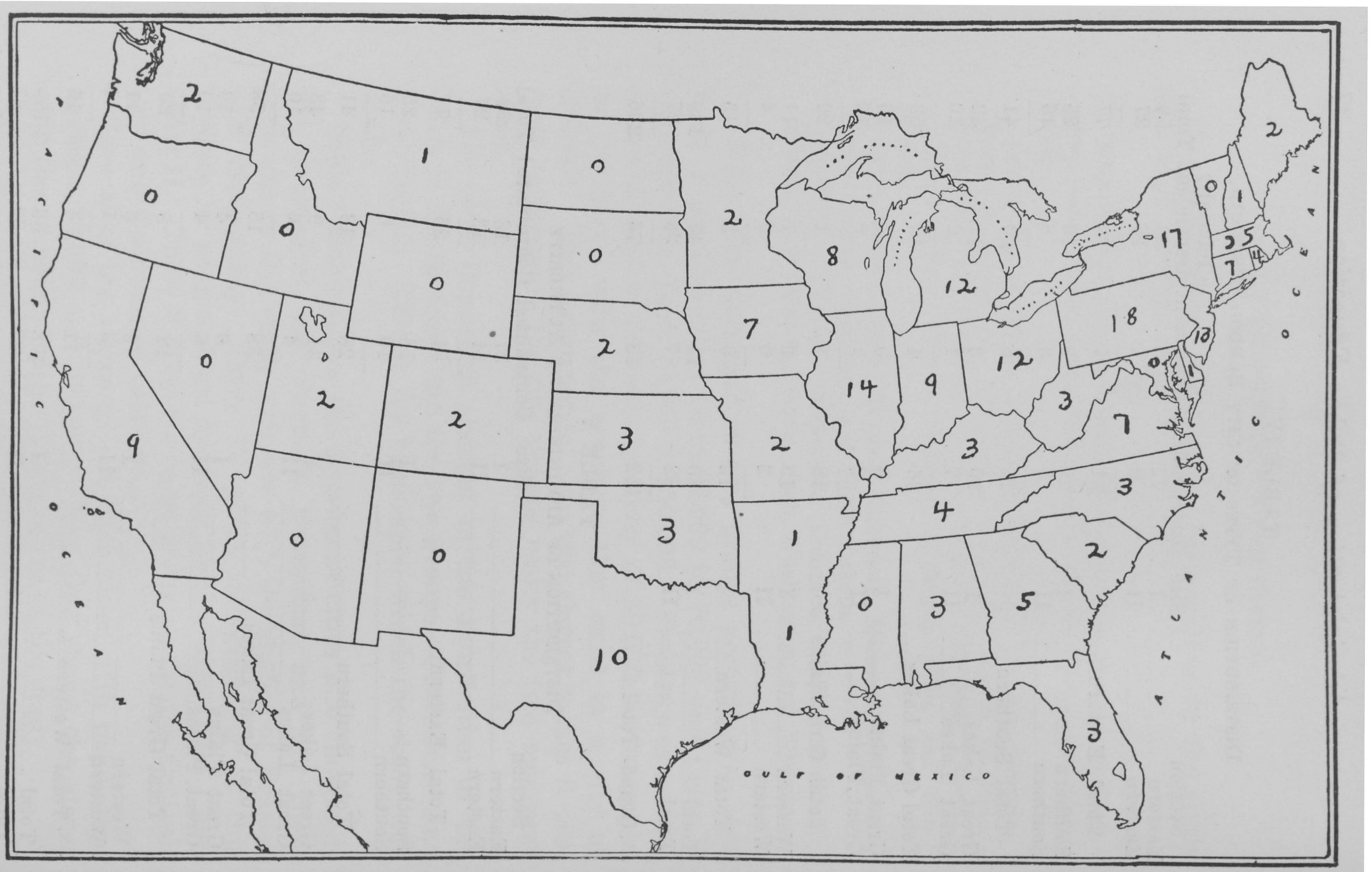
DISTRIBUTION OF TYPES OF CITY SCHOOL DISTRICTS

Section	Size	Independent	Dependent	Partially Dependent	Total
Eastern	I	22	5	23	50
Eastern	II	9	2	16	27
Total Eastern		31	7	39	77
Southern	I	10	3	12	25
Southern	II	5	3	8	16
Total Southern		15	6	20	41
Great Lakes	I	29	3	11	43
Great Lakes	II	7	1	2	10
Total Great Lakes		36	4	13	53
Great Plains	I	9	0	1	10
Great Plains	II	9	1	0	10
Total G'rt Plains		18	1	1	20
Western	I	10	0	1	11
Western	II	2	0	2	4
Total Western		12	0	3	15
Total	I	80	11	48	139
Total	II	32	7	28	67
Grand Total		112	18	76	206

TABLE V

DISTRIBUTION OF ADMINISTRATIVE AUTHORITY

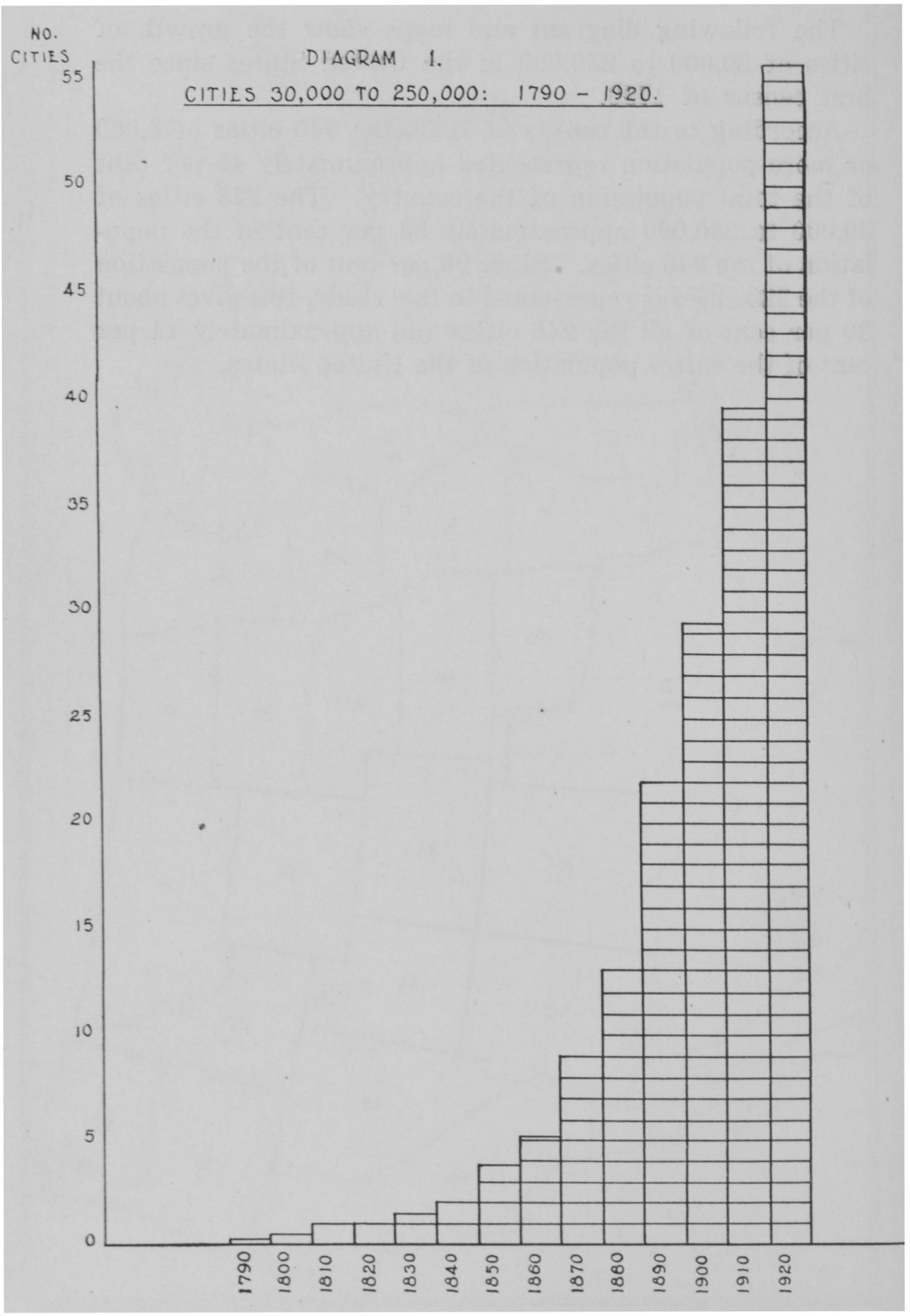
Section	Size	Centralized	Coördinated	Total
Eastern	I	37	13	50
Eastern	II	14	13	27
Total Eastern		51	26	77
Southern	I	18	7	25
Southern	II	10	6	16
Total Southern		28	13	41
Great Lakes	I	34	9	43
Great Lakes	II	4	6	10
Total Great Lakes		38	15	53
Great Plains	I	6	4	10
Great Plains	II	6	4	10
Total Great Plains		12	8	20
Western	I	8	3	11
Western	II	3	1	4
Total Western		11	4	15
Total	I	103	36	139
Total	II	37	30	67
Grand Total		140	66	206

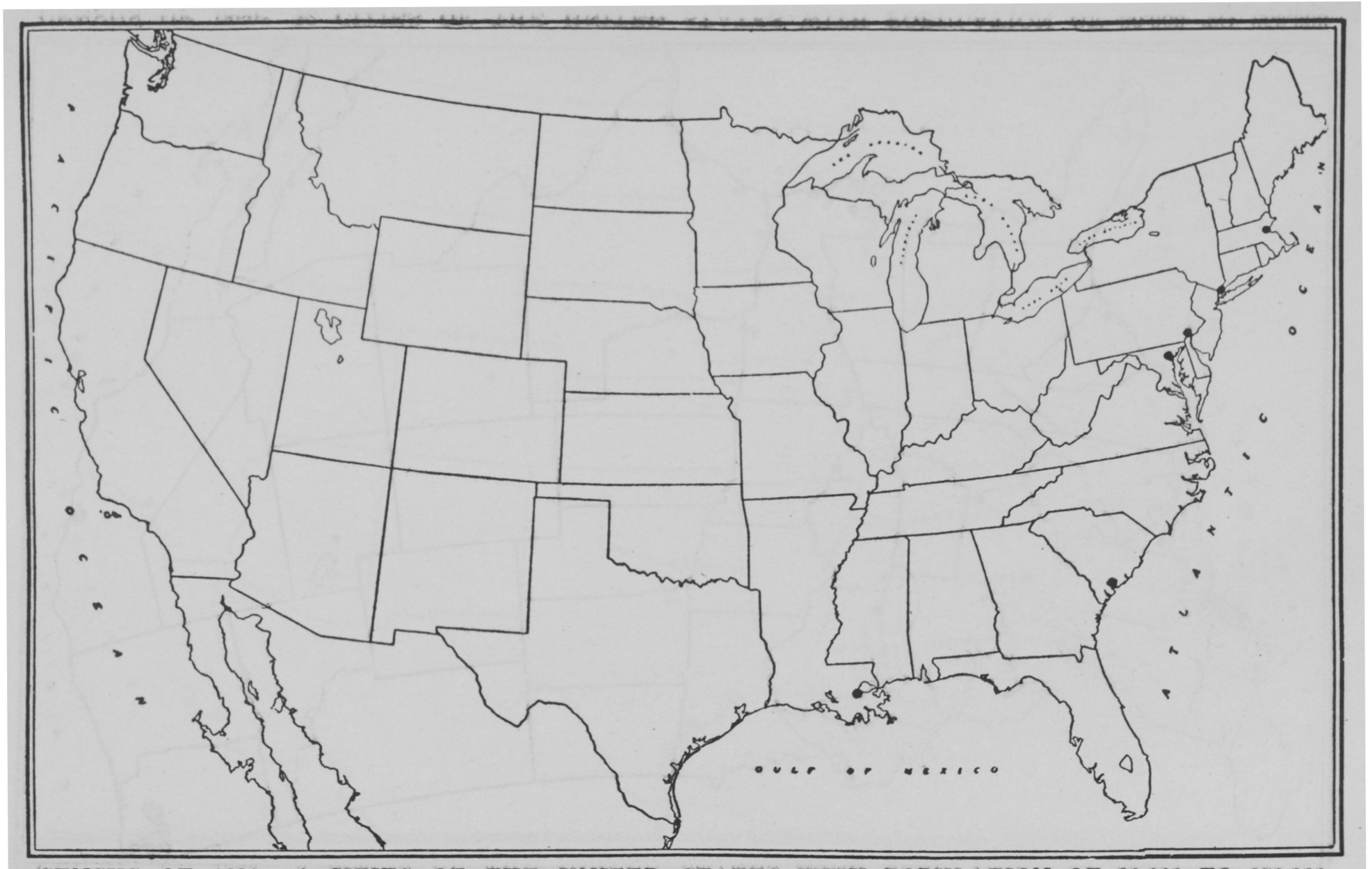


CENSUS OF 1920: 223 CITIES OF THE UNITED STATES WITH POPULATION OF 30,000 TO 250,000.
NUMBER IN EACH STATE

The following diagram and maps show the growth of cities of 30,000 to 250,000 in the United States since the first census of 1790.

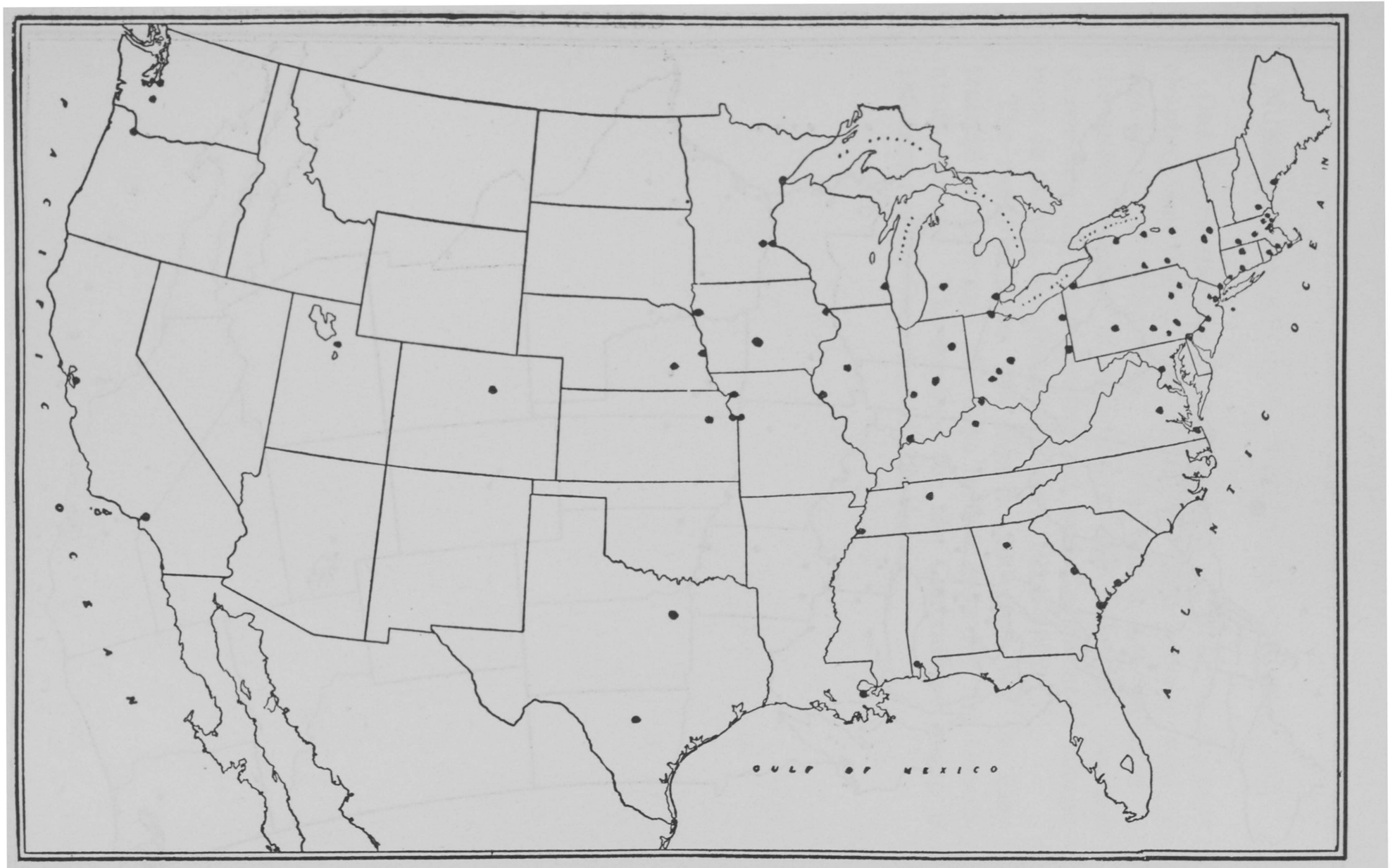
According to the census of 1920, the 946 cities of 8,000 or more population represented approximately 40 per cent of the total population of the country. The 223 cities of 30,000 to 250,000 approximately 33 per cent of the population of the 946 cities. Since 90 per cent of the population of the 223 cities is represented in this study, this gives about 30 per cent of all the 946 cities and approximately 14 per cent of the entire population of the United States.


NO. CITIES
DIAGRAM 1.
CITIES 30,000 TO 250,000: 1790 - 1920.
55
50
45
40
35
30
25
20
15
10
5
0
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920

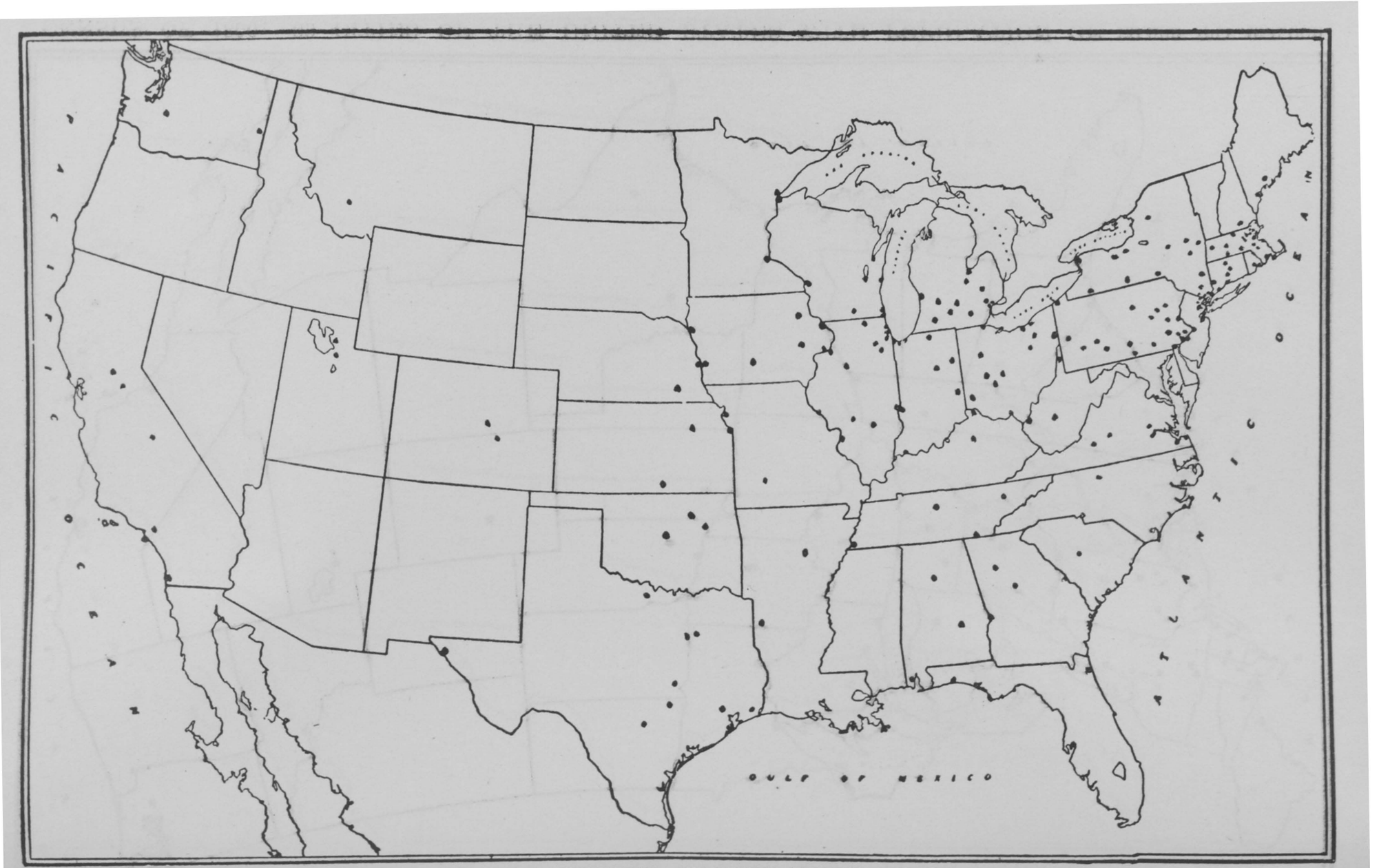


CENSUS OF 1830: 6 CITIES OF THE UNITED STATES WITH POPULATION OF 30,000 TO 250,000

CENSUS OF 1860: 22 CITIES OF THE UNITED STATES WITH POPULATION OF 30,000 TO 250,000



CENSUS OF 1890: 89 CITIES OF THE UNITED STATES WITH POPULATION OF 30,000 TO 250,000



CENSUS OF 1920: 223 CITIES OF THE UNITED STATES WITH POPULATION OF 30,000 TO 250,000

Number of Days Schools Were in Session, 1921–1922

One of the indexes used by Ayres, as given in the next chapter, was that of the number of days schools were in session for a given year. While this is not included in the index number of this study, the following diagram shows the days the *Centralized* and *Coördinated* schools were in session for the school year, 1921–1922.

The range is from 165 days to 200 days for the Centralized schools and 167 days to 200 days for the Cöordintade schools. The median for the Centralized group is 183 days for the Coördinated, 185 days.

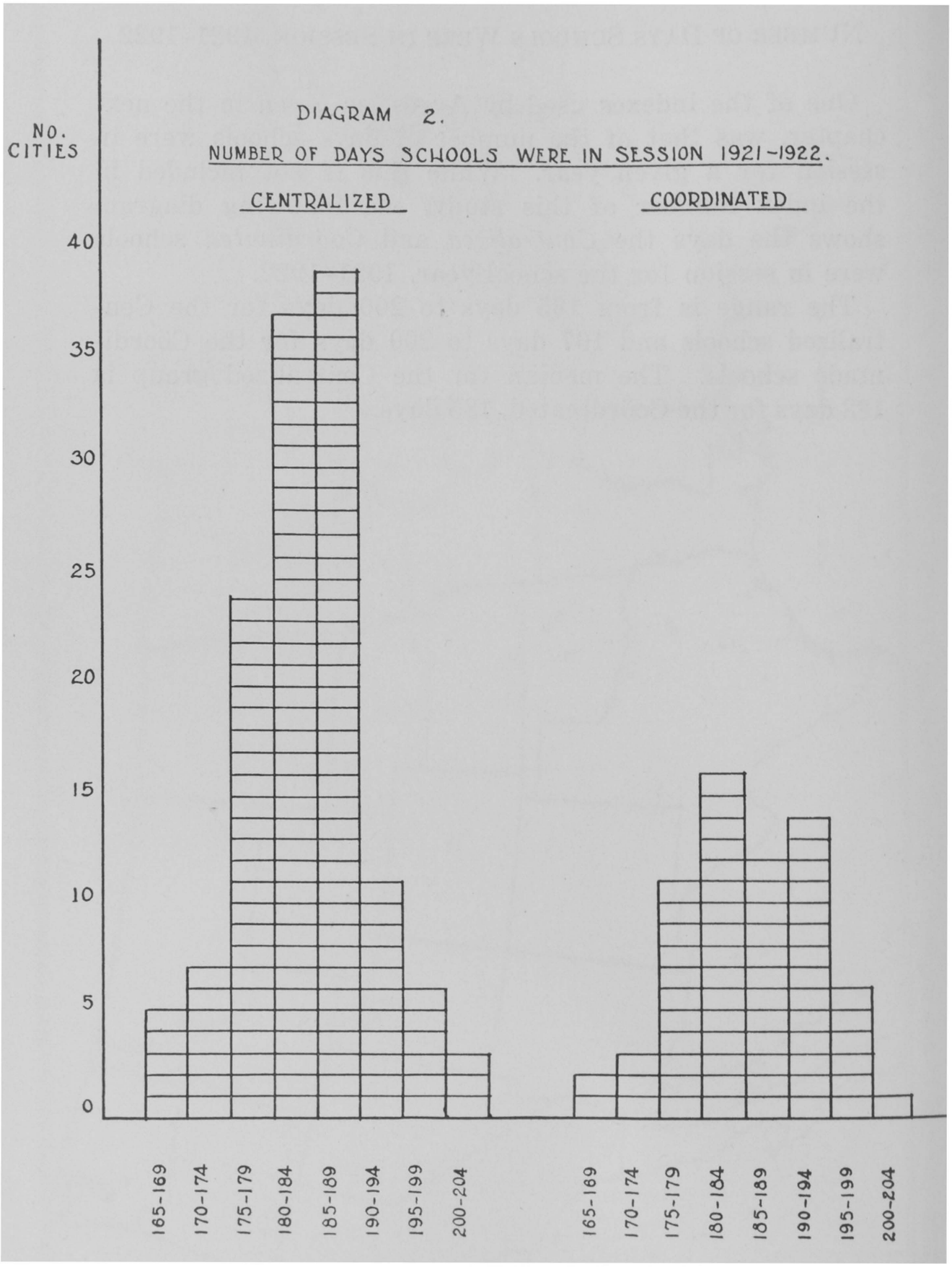


DIAGRAM 2.
NUMBER OF DAYS SCHOOLS WERE IN SESSION 1921-1922.
NO. CITIES
CENTRALIZED
COORDINATED
40
35
30
25
20
15
10
5
0
165-169
170-174
175-179
180-184
185-189
190-194
195-199
200-204
165-189
170-174
175-179
180-184
185-189
190-194
195-199
200-204

CHAPTER II

SOME MEASURES OF EDUCATIONAL EFFICIENCY: THE INDEX NUMBER AND THE FUNCTIONS OF ADMINISTRATION

A Study of Index Numbers and the Use of an Index Number in This Study

The index number as a statistical device in business as well as in education is discussed by Frasier.[1] For example, the cost of living is measured by the use of 327 commodities made up of the various items that enter into the cost of living. Frasier says:

> The average wholesale price for the month is computed for each commodity. In order that each article may have proper weight in determining the total index number, it is multiplied by the estimated quantity of that article marketed in 1909. The index number for 1913 is fixed as 100 and the computed index number for each month is expressed as a per cent of that obtained for 1913.

Ayres was the first to make use of the index number in its application to educational matters. In his *Index Number for State School Systems*,[2] he used the following ten items:

1. Per cent of school population attending school daily.
2. Average days attended by each child of school age.
3. Average number of days schools were kept open.
4. Per cent that high-school attendance was of total attendance.
5. Per cent that boys were of girls in high school.
6. Average annual expenditure per child attending.
7. Average annual expenditure per child of school age.
8. Average annual expenditure per teacher employed.
9. Expenditure per pupil for purposes other than teachers' salaries.
10. Expenditure per teacher for salaries.

---

[1]George W. Frasier: *The Control of City School Finances*, p. 65.

[2]L. P. Ayres: *An Index Number for State School Systems*, p. 14.

The first five of these indexes are educational in nature and the second five are financial. Ayres computed this index number for each state by totaling the ten items and dividing by ten. This scheme enabled him to rank the states. His study aroused a great deal of discussion in educational circles.

Frasier used an index number to determine the best plan for fiscal control of city schools. In his study, referred to above, pages 68–69, he gives the following index number:

1. The per cent of 16 and 17-year-old childen in school.
2. The per cent of elementary classes having fewer than forty children enrolled.
3. The per cent of children who have 60 square feet or more playground space.
4. The per cent of teachers who have six or more years training above the eighth grade.
5. The per cent of children enrolled who attend school all day, and in adequate buildings owned by the city.
6. The per cent of the increased cost of living from 1913–1914 to 1919–1920 that was met by increased salaries for elementary women teachers.

For detailed explanation of the use made by Frasier of his index number, see Chapter VIII of his study. He applied his index number to fiscally independent and to fiscally dependent school systems. After giving the data for computing the Biserial r, he says:

> The correlation by the above method, between fiscal dependence and school efficiency as measured by the index number, is —.27. This shows that there is a relationship, at least among the cities studied, between fiscal control and school efficiency. The fact that the correlation is definitely negative shows that a fiscally independent school system has a better chance to achieve success than one in which the finances are in the hands of the city government.

The Index Number of this Study

The index number used in this study is made up of four educational and four financial factors. These indexes and the way each was calculated are as follows:

EDUCATIONAL

1. Teacher-pupil ratio in the elementary grades on the basis of average daily attendance. Table V, page 51.[3] Column 8 divided by total Columns 3 and 4.
2. Teacher-pupil ratio in the secondary grades on the basis of average daily attendance. Table V, page 51.[3] Column 16 divided by total Columns 11 and 12.
3. Percentage secondary teachers are of total teachers in day schools. Table V, page 51. Total columns 11 and 12 divided by total columns 3, 4, 11 and 12.
4. Percentage average daily attendance in secondary schools is of average daily attendance of day schools. Table V, page 51. Column 16 divided by total Columns 8 and 16.

FINANCIAL

5. Average spent per pupil in average daily attendance on the basis of current expenses. Table V, page 51 and Table XV, page 136. Column 9 less Column 8, Table XV divided by total Columns 8 and 16, Table V.
6. Percentage salaries of teachers in day schools are of current expenses. Table XV, page 136, and Table XVI, page 155. Column 11, Table XVI divided by Column 9 less Column 8, Table XV.
7. Percentage supervisors' and principals' salaries and expenses are of current expenses. Table XV, page 136, and Table XVI, page 155. Column 6, Table 16 divided by Column 9 less Column 8, Table XV.
8. Percentage general control is of current expenses. Table XV, page 136. Total Columns 2 and 3 divided by Column 9 less Column 8.

The use made of each factor and its justification as a measure of school efficiency is given below.

INDEX NUMBER 1

Teacher-Pupil Ratio in the Elementary Grades

This is one of the best measures of an educational nature that can be applied to the elementary grades. The proper basis of consideration is that of average daily attendance.

[3]Bureau of Education Bulletin, 1924, No. 34.

This is better than the total enrollment because it more nearly represents the daily load of the teacher so far as pupils in attendance are concerned.

The median and mean for all centralized cities are 30.1 and 30.2, respectively, and for the coördinated cities, 30.4 and 30.8. These measures indicate little difference in the two types of organization so far as this factor is concerned.

INDEX NUMBER 2

Teacher-Pupil Ratio in the Secondary Grades

This has the same importance in the secondary grades as factor one has in the elementary grades. It constitutes a very definite measure of the daily task of the secondary teacher. The median and mean for the centralized group are 21.6 and 21.7 and for the coördinated schools 22.6 and 22.5. The difference in the types of schools is slightly more marked than in factor No. 1.

INDEX NUMBER 3

Percentage Secondary Teachers Are of Total Teachers in Day Schools

This factor measures the holding power of the schools. Theoretically, if all pupils enrolled in school continued in attendance through the twelve grades, the percentage in the last four years would approximate one-third of the total enrollment for the twelve years.

This does not argue that the teacher-pupil ratio should be the same for the last four years that it is for the first eight grades. If it were possible to maintain the same class organization through the upper four years, there would still remain the difference in the nature of subject matter as well as other considerations.

The median and mean for this factor are 21.8 and 22.6 for the centralized schools and 21.0 and 21.2 for the coördinated group.

INDEX NUMBER 4

Percentage Average Daily Attendance in the Secondary Grades Is of Average Daily Attendance of Day Schools

At first this may seem to be a duplication of factor No. 3 since it involves comparison on a percentage basis of the teaching load as measured by the teacher-pupil ratio. But it does not follow that the results are the same. The median and mean in this factor are 16.9 and 17.5 for the centralized type and 16.6 and 16.6 for the coördinated.

The above four factors are educational in nature and they afford just measures of the willingness of the board of education to enable teachers and pupils to work to the best advantage.

Here, as always, extremes should be avoided. A glance at diagrams 3, 4, 5, 6, 7, 8, 9, and 10, on pages 54, 55, 56, 57, 58, 59, 60, and 61 convinces one that one extreme may be as questionable as the other. Doubtless the best condition is represented by the central tendencies of these diagrams.

On the basis of present-day practice, these central measures show the tendency of these four factors in the 206 city school districts of this study.

INDEX NUMBER 5

Average Spent Per Pupil in Average Daily Attendance on the Basis of Current Expenses

It should be explained that this is not the actual cost of instruction per pupil in day schools. Capital outlay and debt service are not included in this factor. Column 4 of the table used in these computations could have been used for a per-pupil cost of actual instruction in day schools.

Column 9 of the table which is "current expenses" was used after deducting Column 8, "interest on indebtedness," and "current expenses" include, in addition to full-time day schools, part-time schools, night schools and summer schools.

On this basis, comparison is made of the two types of schools under consideration. The attitude of the people of a given school district, as reflected by the Board of Education, to provide sufficient funds for the twelve grades of work in day schools is shown by this factor. It is an excellent criterion of such an attitude.

Centralized schools show a median and mean of this factor of $89.85 and $90.57, while the coördinated group represents a showing of $86.34 and $92.22, respectively.

INDEX NUMBER 6

Percentage Salaries of Teachers in Day Schools Are of Current Expenses

This is a very definite measure of efficiency. The measures of central tendency for the two groups of schools under consideration are significant; centralized: median, 64.6, mean, 64.8; coördinated: median, 63.4, mean, 64.2. These measures for the two groups are substantially the same.

The percentage that teachers' salaries are of current expenses is of greatest importance. No form of service in a school system can take the place of instruction. It may be improved by wise administration and supervision but if the relative amount paid for instruction is low, the efficiency of the school work may be questioned.

INDEX NUMBER 7

Percentage Supervisors and Principals' Salaries and Expenses Are of Current Expenses

The supervision and administration of public education in these cities as reflected in the work of supervisors and principals are essential factors of efficiency. As a financial measure, this factor is an excellent criterion of results obtained and the percentage should be a substantial one.

The centralized schools show 7.5 and 7.6 for the median and mean and the coördinated schools 7.1 and 7.1.

INDEX NUMBER 8

Percentage General Control Is of Current Expenses

The so-called "overhead" of our school systems has been the subject of much controversy. Many intangible elements enter into consideration and the efficient school should show a fair percentage for control. The median, 3.2, and mean, 3.5, for centralized schools, and 3.3 and 3.5 for coördinated schools, show present tendencies. The two means in this factor are identical.

Graphical Representation of the Index Number

Diagrams 3 to 10 show the range and distribution of each of the index numbers. The sampling of population is sufficient to make the two central tendencies, median and mean, approximately the same in each of the indexes.

Table VI gives these central tendencies for each of the indexes of Centralized and Coördinated schools.

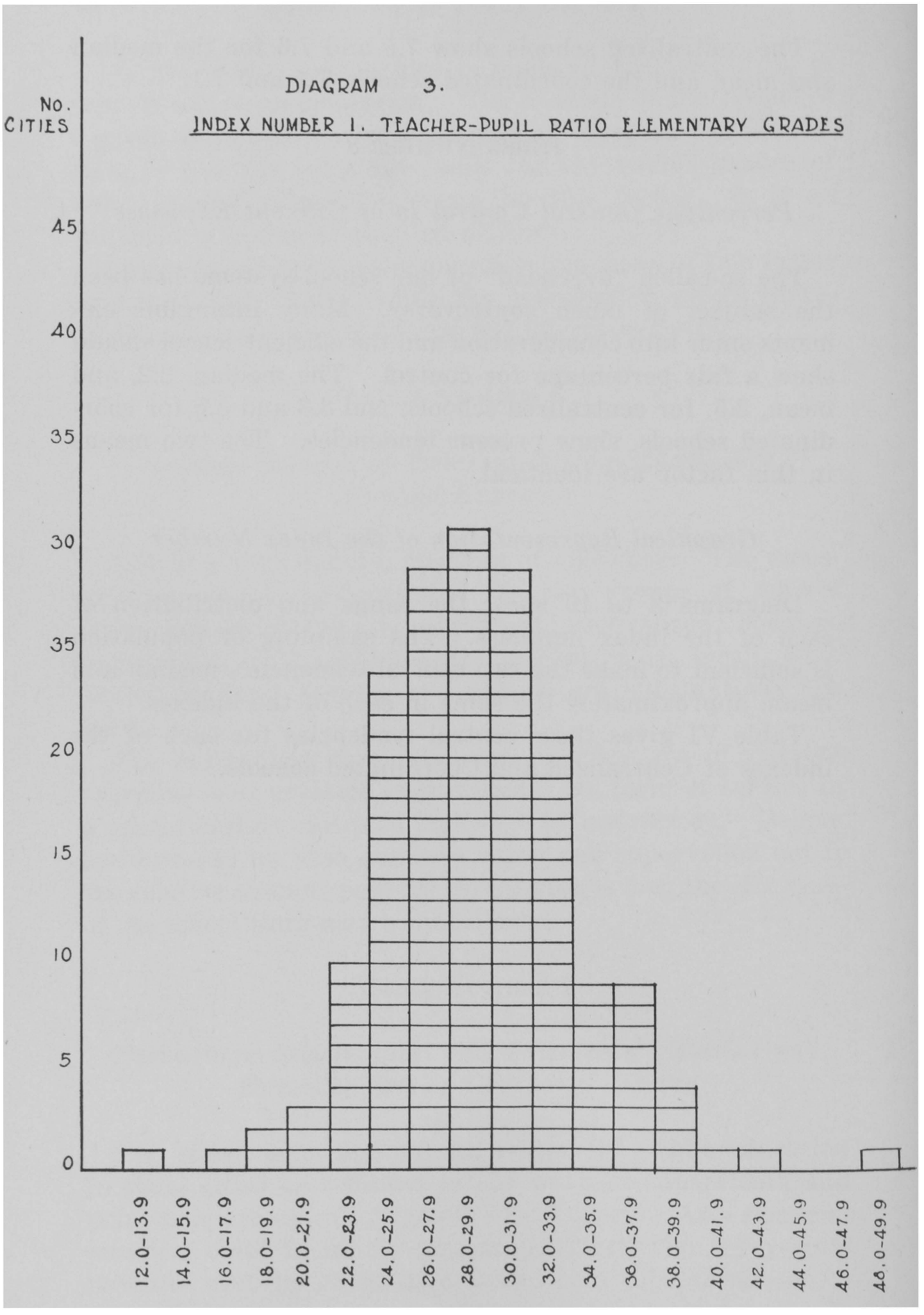


DIAGRAM 3.
INDEX NUMBER 1. TEACHER-PUPIL RATIO ELEMENTARY GRADES
NO. CITIES
45
40
35
30
35
20
15
10
5
0
12.0-13.9
14.0-15.9
16.0-17.9
18.0-19.9
20.0-21.9
22.0-23.9
24.0-25.9
26.0-27.9
28.0-29.9
30.0-31.9
32.0-33.9
34.0-35.9
36.0-37.9
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42.0-43.9
44.0-45.9
46.0-47.9
48.0-49.9

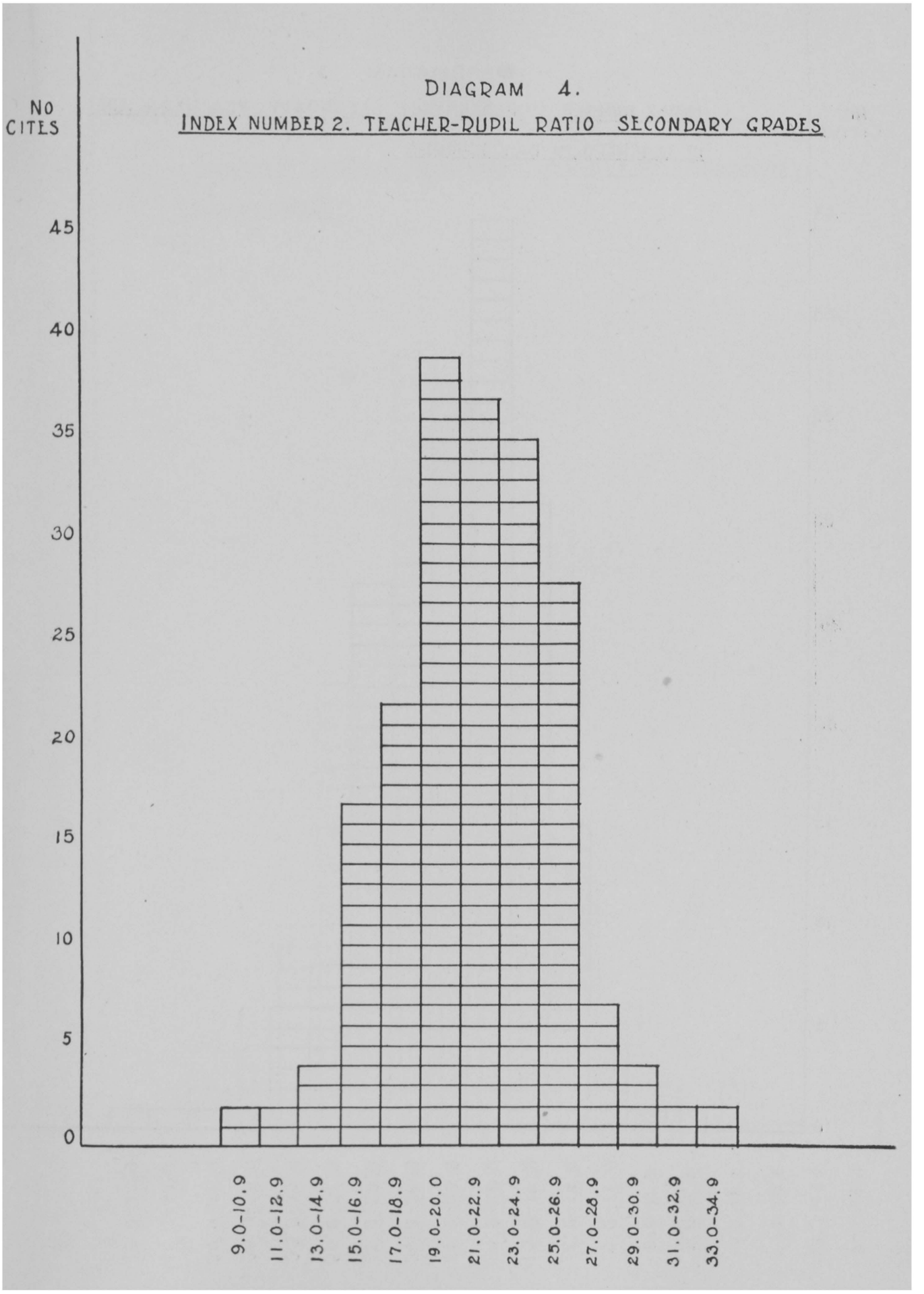


DIAGRAM 4.
INDEX NUMBER 2. TEACHER-PUPIL RATIO SECONDARY GRADES
NO CITES
45
40
35
30
25
20
15
10
5
0
9.0-10.9
11.0-12.9
13.0-14.9
15.0-16.9
17.0-18.9
19.0-20.0
21.0-22.9
23.0-24.9
25.0-26.9
27.0-28.9
29.0-30.9
31.0-32.9
33.0-34.9

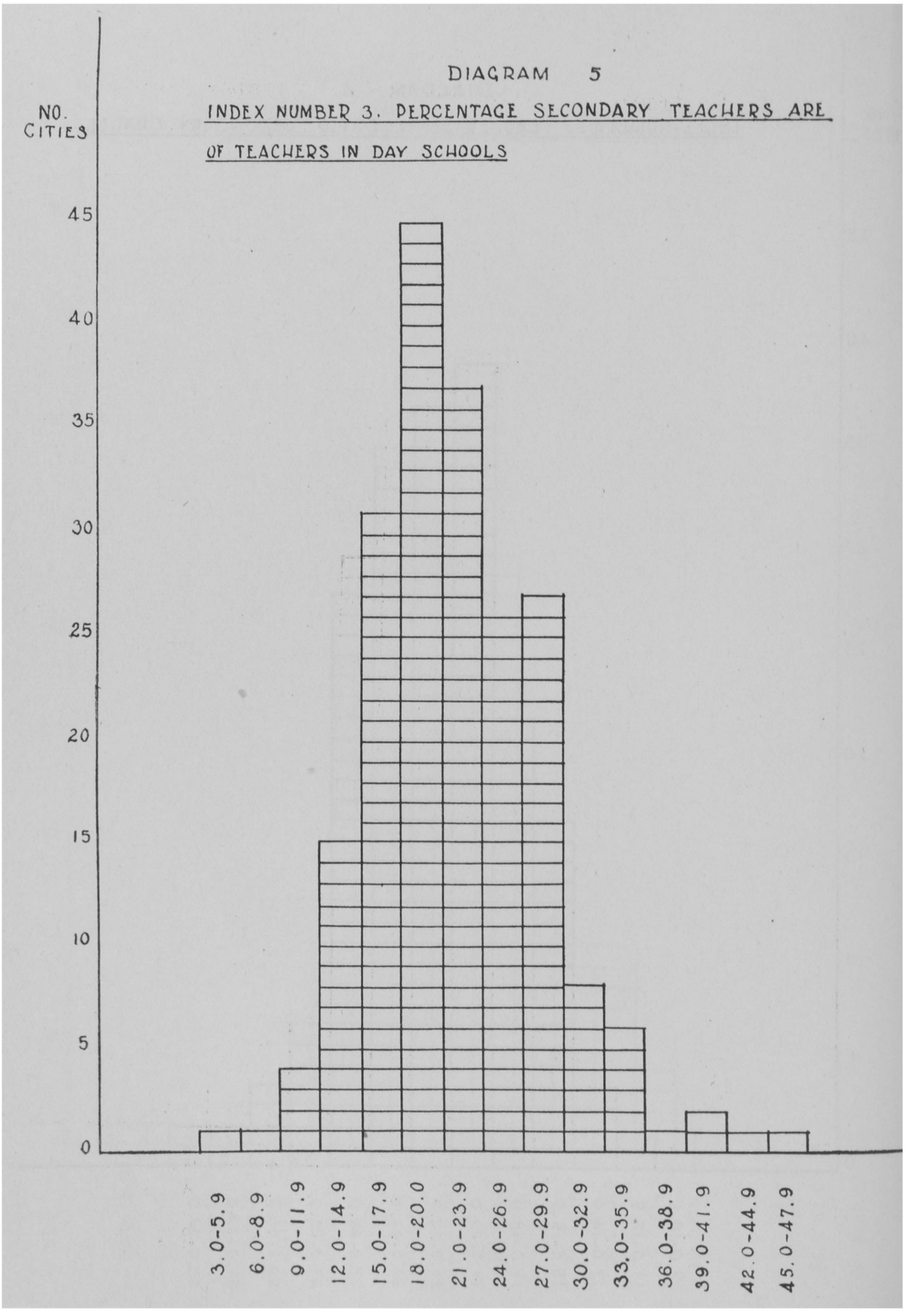


DIAGRAM 5
INDEX NUMBER 3. PERCENTAGE SECONDARY TEACHERS ARE OF TEACHERS IN DAY SCHOOLS
NO. CITIES
45
40
35
30
25
20
15
10
5
0
3.0-5.9
6.0-8.9
9.0-11.9
12.0-14.9
15.0-17.9
18.0-20.0
21.0-23.9
24.0-26.9
27.0-29.9
30.0-32.9
33.0-35.9
36.0-38.9
39.0-41.9
42.0-44.9
45.0-47.9

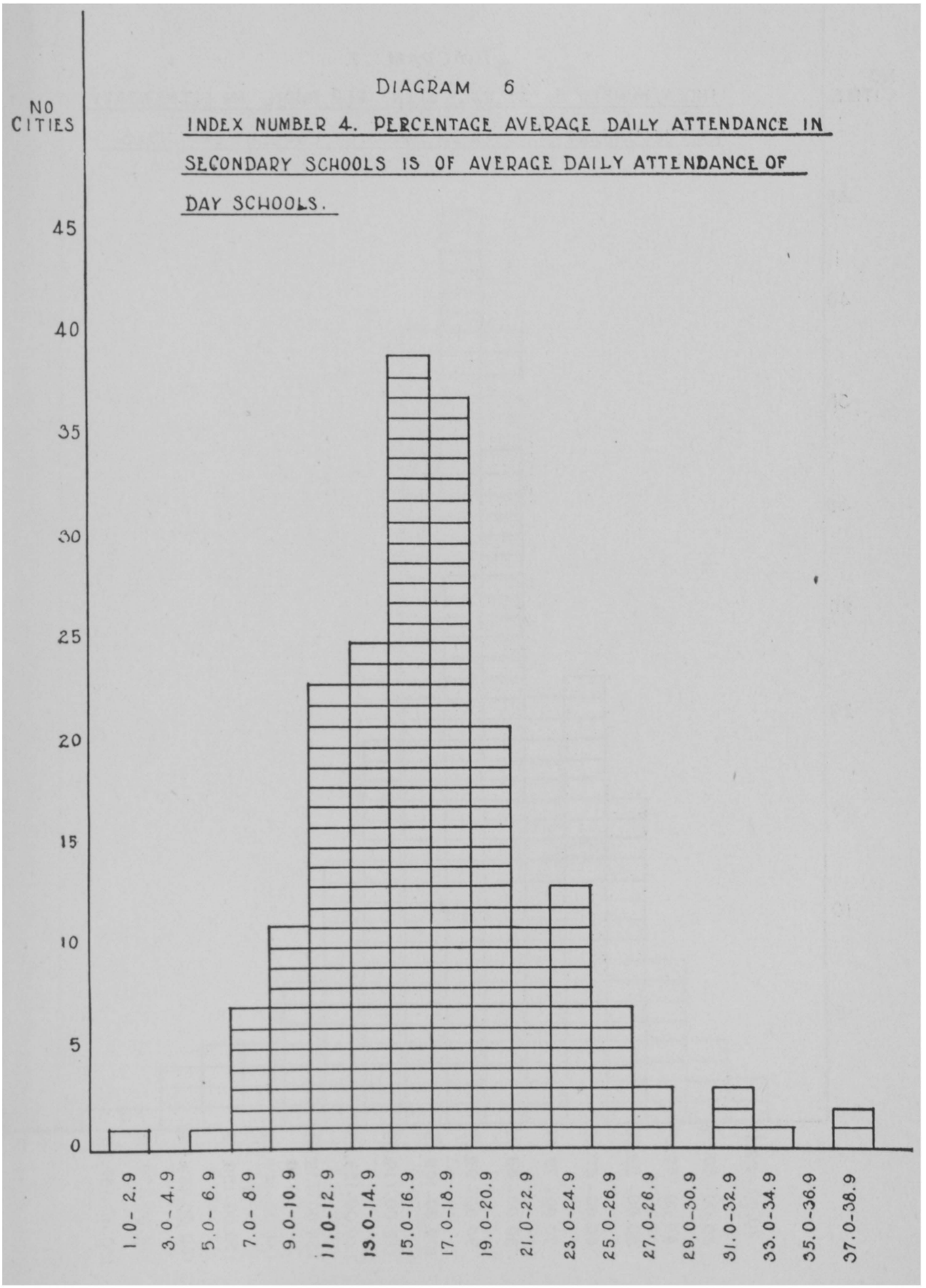
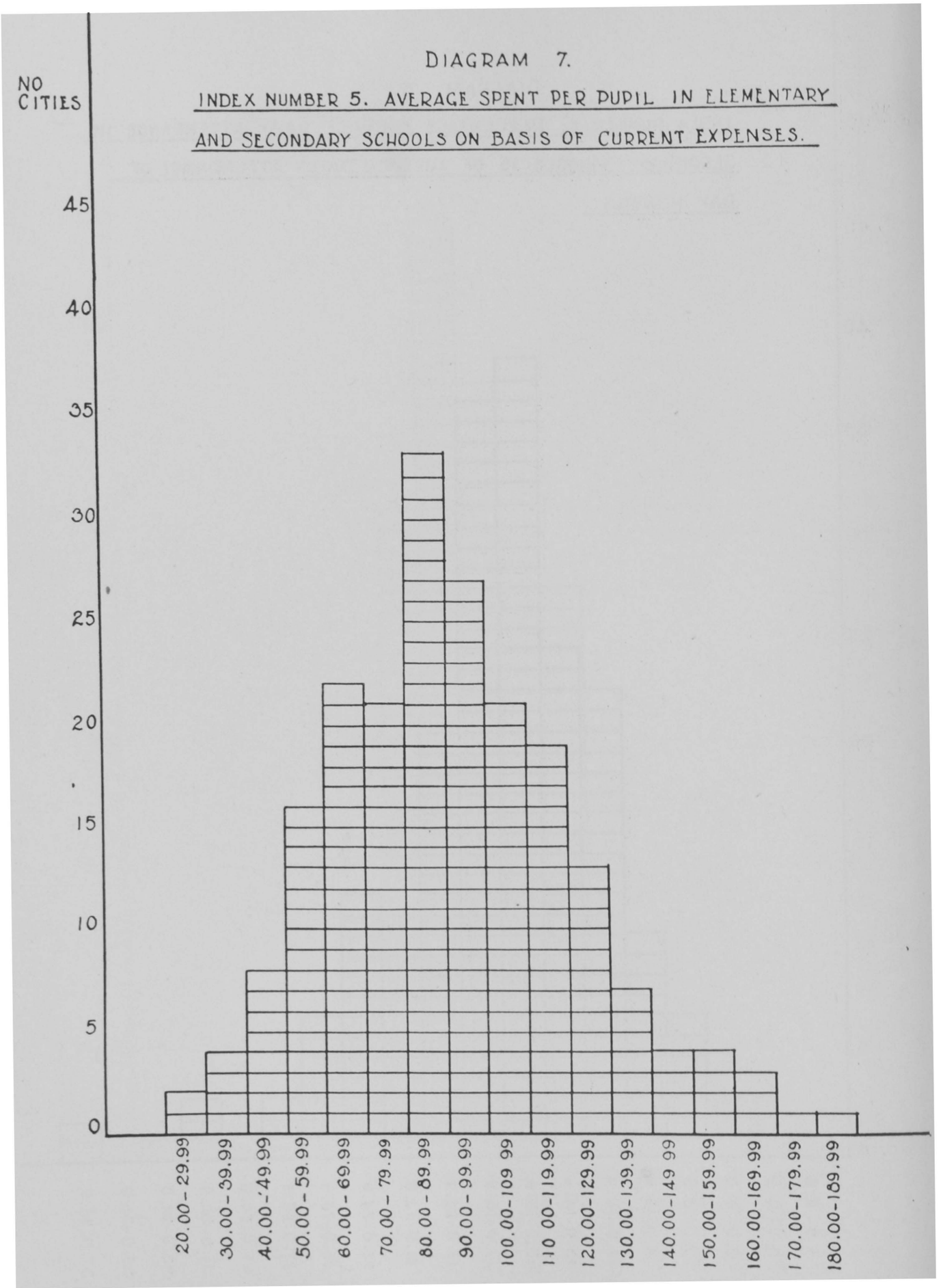


DIAGRAM 6
INDEX NUMBER 4. PERCENTAGE AVERAGE DAILY ATTENDANCE IN SECONDARY SCHOOLS IS OF AVERAGE DAILY ATTENDANCE OF DAY SCHOOLS.
NO CITIES
45
40
35
30
25
20
15
10
5
0
1.0-2.9
3.0-4.9
5.0-6.9
7.0-8.9
9.0-10.9
11.0-12.9
13.0-14.9
15.0-16.9
17.0-18.9
19.0-20.9
21.0-22.9
23.0-24.9
25.0-26.9
27.0-28.9
29.0-30.9
31.0-32.9
33.0-34.9
35.0-36.9
37.0-38.9

DIAGRAM 7.

INDEX NUMBER 5. AVERAGE SPENT PER PUPIL IN ELEMENTARY AND SECONDARY SCHOOLS ON BASIS OF CURRENT EXPENSES.



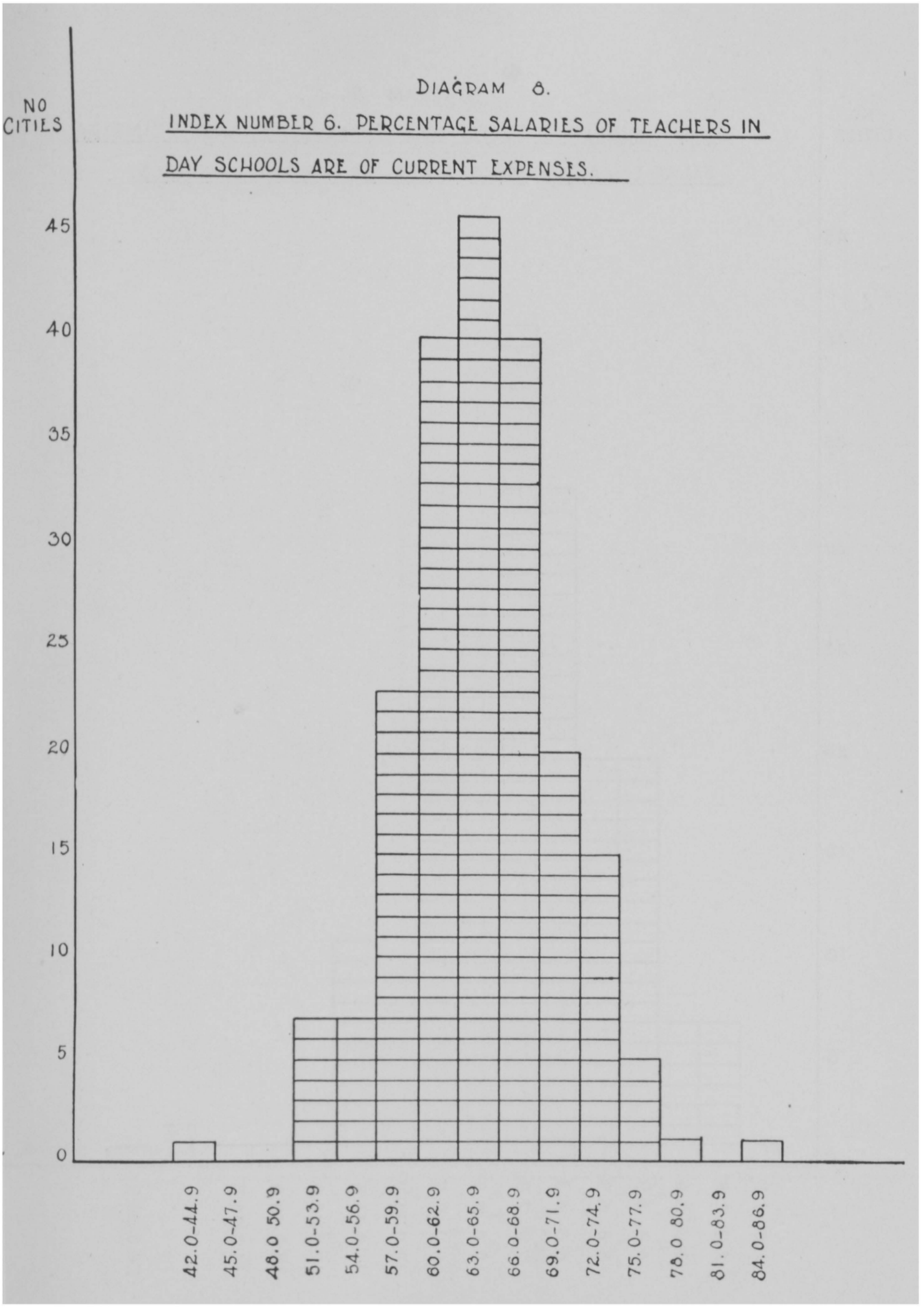


DIAGRAM 8.
INDEX NUMBER 6. PERCENTAGE SALARIES OF TEACHERS IN DAY SCHOOLS ARE OF CURRENT EXPENSES.
NO CITIES
45
40
35
30
25
20
15
10
5
0
42.0-44.9
45.0-47.9
48.0 50.9
51.0-53.9
54.0-56.9
57.0-59.9
60.0-62.9
63.0-65.9
66.0-68.9
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75.0-77.9
78.0 80.9
81.0-83.9
84.0-86.9

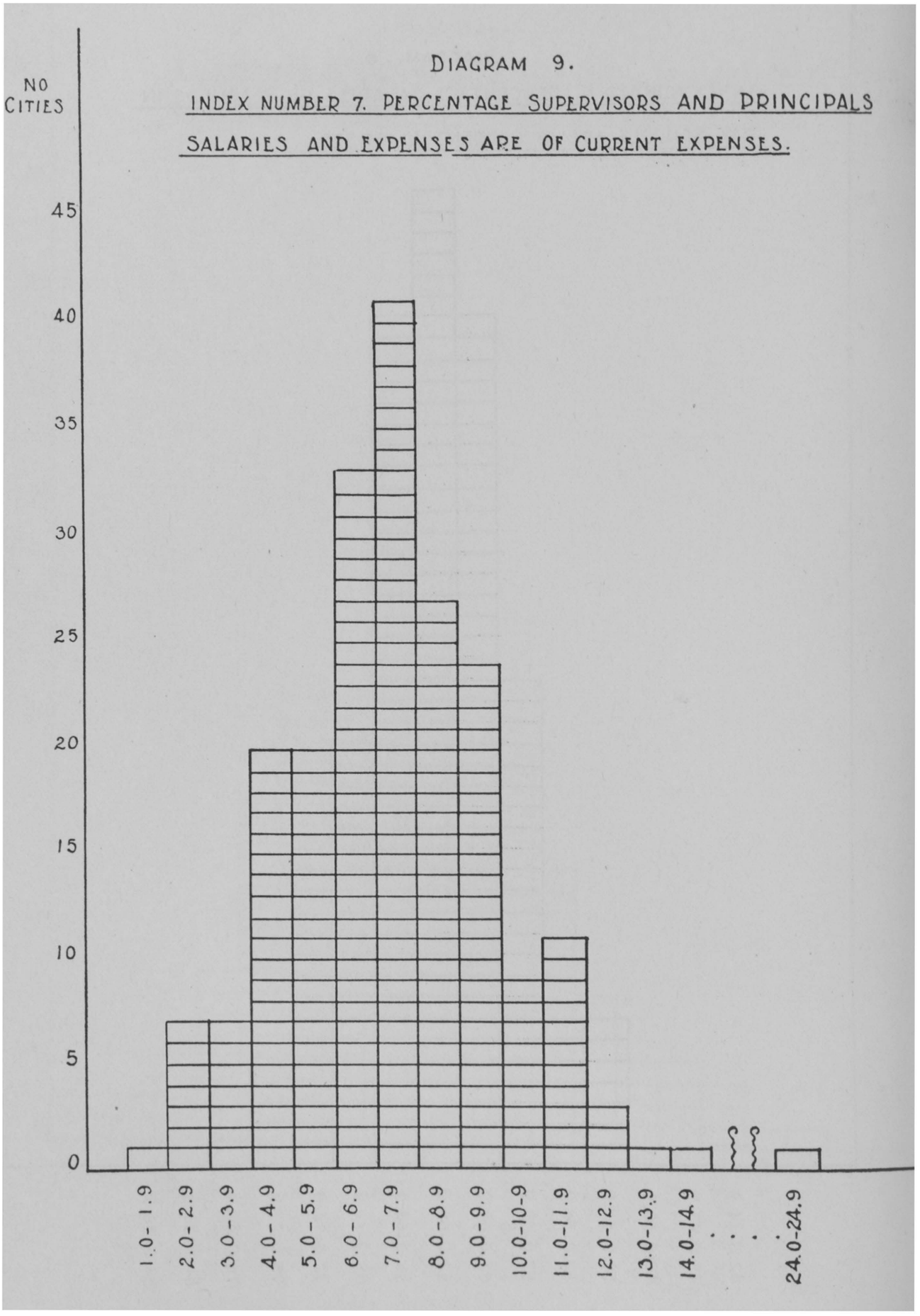


DIAGRAM 9.
INDEX NUMBER 7. PERCENTAGE SUPERVISORS AND PRINCIPALS SALARIES AND EXPENSES ARE OF CURRENT EXPENSES.
NO CITIES
45
40
35
30
25
20
15
10
5
0
1.0- 1.9
2.0- 2.9
3.0- 3.9
4.0- 4.9
5.0- 5.9
6.0- 6.9
7.0- 7.9
8.0- 8.9
9.0- 9.9
10.0-10-9
11.0-11.9
12.0-12.9
13.0-13.9
14.0-14.9
24.0-24.9

DIAGRAM 10.

INDEX NUMBER 8. PERCENTAGE GENERAL CONTROL IS OF CURRENT EXPENSES.

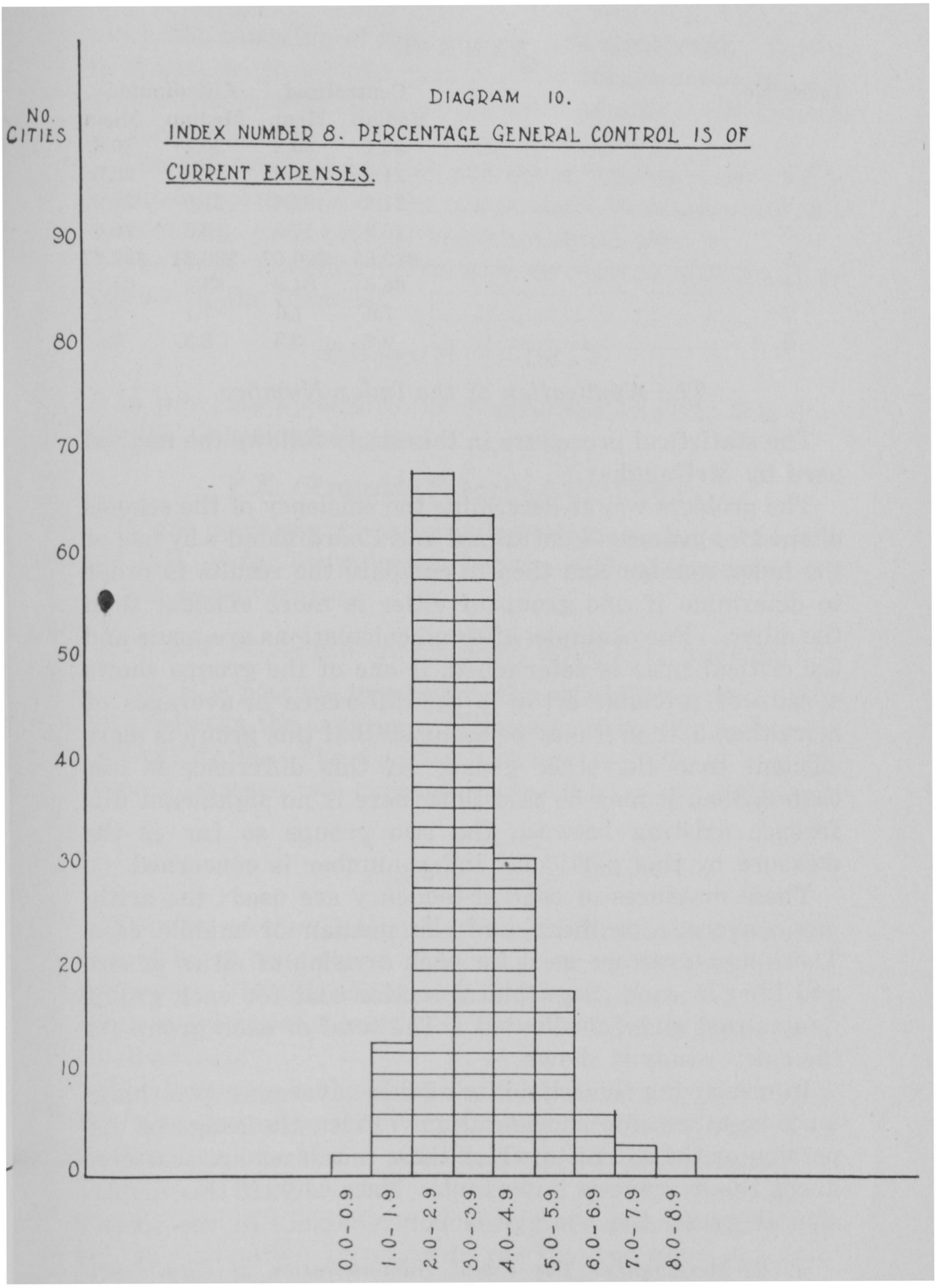


TABLE VI

Index No.	Centralized		Coördinated	
	Median	Mean	Median	Mean
1	30.1	30.2	30.4	30.8
2	21.6	21.7	22.6	22.5
3	21.8	22.6	21.0	21.2
4	16.9	17.5	16.6	16.6
5	$89.85	$90.57	$86.34	$92.22
6	64.6	64.8	63.4	64.2
7	7.5	7.6	7.1	7.1
8	3.2	3.5	3.3	3.5

The Application of the Index Number

The statistical procedure in this study follows the method used by McGaughey.[4]

The problem was to determine the efficiency of the schools of the two groups—Centralized and Coördinated—by use of the index number and then to compare the results in order to determine if one group of cities is more efficient than the other. For example, after all calculations are made and the critical ratio is determined, if one of the groups shows a ratio of probable error to the difference in averages of more than 3, then it may be assumed that this group is more efficient than the other group. If this difference is less than 3, then it may be said that there is no significant difference existing between the two groups so far as the measure by this particular index number is concerned.

These measures of central tendency are used: the arithmetic average or mean and the median or middle case. These measures are used for each division of cities of size and kind in each geographical section and for each group, Centralized and Coördinated. The total of each group for the entire study is shown.

In measuring the reliability of these averages, two things must be taken into consideration. First, the range of dispersion or the extent to which these measures are scattered about the average is important. Naturally, if this dispersion is great, the average is not reliable. In the second

[4]J. R. McGaughey: *The Fiscal Administration of City School Systems*, pp. 6–10.

place, the sampling of the population is significant. Again, it is natural to assume that if other things are equal, the greater the number of cases, the more reliable is the average of the measures.

The following statistical procedure was employed. For detailed explanation of the use of these measures, one may consult any good text on statistical methods.

The S. D. (Standard Deviation or Sigma) was found by the use of the formula,

$$S.D.=\sqrt{M_A{}^2-(M_A)^2}$$

A in this case applies to the Centralized schools; B is used for the Coördinated group.

$$P.E.\ (\text{Probable Error})=0.6745\times S.D.$$

It was necessary in these computations to have, not only the P.E. of the distribution, but the P.E. of the difference of any two averages.

$$^{P.E.}\ \text{Dif. of Aver.}=\sqrt{(^{P.E.}\ \text{Aver. A})^2+(^{P.E.}\ \text{Aver. B})^2}$$

Now it is possible to measure the reliability of the difference between the averages. This is done by calculating the Critical Ratio. The Critical Ratio is the ratio of the difference between two averages to the P.E. of the difference.

$$C.R.=\frac{M_A-M_B}{^{P.E.}\ \text{Dif.}}$$

The size of the Critical Ratio, according to statisticians, should be at least three times as great as the P.E. of that difference. If this difference is three times its P.E., the chances are about 1 to 45 that the true difference can be as small as zero.

The following tables show the computation of the Critical Ratio as applied to the five geographical groups with their subdivisions into size of cities and type of administration.

Table VII gives this application to the Centralized schools, Table VIII to the Coördinated schools, and Table IX the summation resulting in the Critical Ratio for each of the eight indexes.

TABLE VII

COMPUTATION OF THE S.D., P.E.$_m$ ETC., OF CENTRALIZED SCHOOLS

INDEX NO. 1

Teacher-Pupil Ratio Elementary Grades

Group	Number of Cities	Mean	S.D.	P.E.$_m$	Sum of Means	Sum of Mean^2	Average of Mean^2
Eastern							
I—Cent.*	37	29.1	4.91	.54	1,078.2	32,225.3	871.0
II—Cent.†	14	29.3	5.88	1.06	410.8	12,503.0	893.1
Total	51	29.2	4.94	.47	1,489.0	44,728.3	877.0
Southern							
I—Cent.	18	33.8	6.42	1.02	608.7	21,306.3	1,183.7
II—Cent.	10	33.7	6.00	1.28	337.4	11,717.1	1,171.7
Total	28	33.8	6.08	.78	946.1	33,023.4	1,179.4
Great Lakes							
I—Cent.	34	29.1	3.88	.45	987.8	29,302.5	861.8
II—Cent.	4	31.6	3.62	1.22	126.3	4,046.6	1,011.7
Total	38	29.3	4.37	.49	1,114.1	33,349.1	877.6
Great Plains							
I—Cent.	6	30.4	4.37	1.20	182.3	5,659.5	943.3
II—Cent.	6	28.6	2.40	.66	171.3	4,942.3	823.7
Total	12	29.5	3.64	.71	353.6	10,601.8	883.5
Western							
I—Cent.	8	27.6	2.51	.60	220.9	6,144.5	768.1
II—Cent.	3	33.8	2.55	.99	101.4	3,622.5	1,207.5
Total	11	29.3	5.42	1.10	322.3	9,767.0	887.9
All Cent.	140	30.2	5.20	.30	4,225.1	131,469.6	939.1

INDEX NO. 2

Teacher-Pupil Ratio in Secondary Schools

Eastern							
I—Cent.*	37	22.3	4.37	.49	826.5	19,107.5	516.4
II—Cent.†	14	23.0	2.68	.48	322.0	7,506.6	536.2
Total	51	22.5	3.95	.37	1,148.5	26,614.1	521.9
Southern							
I—Cent.	18	23.4	4.74	.75	420.3	10,260.6	570.0
II—Cent.	10	23.3	2.43	.52	232.9	5,488.0	548.8
Total	28	23.3	4.42	.56	653.2	15,748.6	562.5
Great Lakes							
I—Cent.	34	20.4	4.96	.57	692.5	14,985.6	440.8
II—Cent.	4	24.7	2.20	.74	98.8	2,459.7	614.9
Total	38	20.8	5.14	.56	791.3	17,445.3	459.1
Great Plains							
I—Cent.	6	20.6	2.73	.75	123.8	2,591.0	431.8
II—Cent.	6	19.9	.91	.25	119.1	2,381.0	396.8
Total	12	20.2	2.51	.49	242.9	4,972.0	414.3
Western							
I—Cent.	8	18.1	7.19	1.71	145.0	2,725.0	340.6
II—Cent.	3	20.1	1.87	.73	60.3	1,222.5	407.5
Total	11	18.7	3.01	.61	205.3	3,947.5	358.9
All Cent.	140	21.7	4.47	.25	3,041.2	68,727.5	490.9

*Cities of 30,000 to 70,000 population.

†Cities of 70,000 to 250,000 population.

TABLE VII *(Continued)*

INDEX NO. 3

Percentage Secondary Teachers Are of Total Teachers in Day Schools

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Cent.*	37	21.3	4.30	.48	786.9	17,472.2	472.2
II—Cent.†	14	17.6	5.25	.95	245.9	4,722.0	337.3
Total	51	20.3	4.81	.45	1,032.8	22,194.2	435.1
Southern							
I—Cent.	18	22.6	6.89	1.10	405.9	10,046.9	558.2
II—Cent.	10	17.9	5.24	1.12	179.1	3,478.3	347.8
Total	28	20.9	6.80	.87	585.0	13,525.2	483.0
Great Lakes							
I—Cent.	34	25.4	7.13	.82	862.9	23,661.5	695.9
II—Cent.	4	19.5	2.74	.92	78.0	1,551.0	387.8
Total	38	22.7	7.47	1.30	340.2	8,565.9	571.1
Great Plains							
I—Cent.	6	28.1	8.18	2.25	168.6	5,138.9	856.5
II—Cent.	6	23.0	3.66	1.01	138.2	3,254.3	542.4
Total	12	25.6	6.64	1.29	306.8	8,393.2	699.4
Western							
I—Cent.	8	28.2	6.71	1.60	225.7	6,721.8	840.2
II—Cent.	3	26.2	2.17	.85	78.7	2,073.5	691.2
Total	11	27.7	5.68	1.16	304.4	8,795.3	799.6
All Cent.	140	22.6	6.87	.39	3,169.9	78,120.4	558.0

INDEX NO. 4

Percentage Average Daily Attendance in Secondary Schools Is of Average Daily Attendance of Day Schools

Eastern							
I—Cent.*	37	17.3	4.79	.53	641.6	11,922.3	322.2
II—Cent.†	14	14.4	4.25	.77	201.8	3,156.9	225.5
Total	51	16.5	4.84	.46	843.4	15,079.2	295.6
Southern							
I—Cent.	18	16.8	5.28	.84	301.6	5,582.1	310.1
II—Cent.	10	13.0	3.00	.64	129.9	1,778.8	177.9
Total	28	15.4	5.07	.65	431.5	7,360.9	262.9
Great Lakes							
I—Cent.	34	19.4	6.70	.78	660.5	14,322.0	421.2
II—Cent.	4	15.9	1.39	.47	63.6	1,019.0	254.8
Total	38	18.9	7.63	1.33	283.9	6,232.0	415.5
Great Plains							
I—Cent.	6	21.0	6.13	1.69	126.2	2,871.2	478.5
II—Cent.	6	17.4	2.98	.82	104.1	1,870.0	311.7
Total	12	19.2	5.14	1.00	230.3	4,741.2	395.1
Western							
I—Cent.	8	20.5	5.63	1.34	163.8	3,615.5	451.9
II—Cent.	3	18.4	5.12	1.99	55.1	1,094.4	364.8
Total	11	19.9	5.67	1.15	218.9	4,709.9	428.2
All Cent	140	17.5	5.58	.32	2,448.2	47,232.2	337.4

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE VII *(Continued)*

INDEX NO. 5

Amount Spent Per Pupil in Average Daily Attendance on Basis of Current Expenses

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Cent.*	37	92.41	25.38	2.81	3,419.00	339,809.9	9,184.0
II—Cent.†	14	96.97	18.62	3.36	1,357.51	136,500.7	9,750.1
Total	51	93.66	23.81	2.25	4,776.51	476,310.6	9,339.4
Southern							
I—Cent.	18	54.84	19.09	3.04	987.07	60,697.8	3,372.1
II—Cent.	10	54.66	14.97	3.19	546.59	32,120.9	3,212.1
Total	28	54.77	17.75	2.26	1,533.66	92,818.7	3,315.0
Great Lakes							
I—Cent.	34	99.51	28.75	3.33	3,383.36	364,787.9	10,729.1
II—Cent.	4	97.25	8.19	2.76	388.99	38,098.5	9,524.6
Total	38	106.68	25.75	4.48	1,600.26	180,658.4	12,043.9
Great Plains							
I—Cent.	6	89.37	25.27	6.96	536.21	51,753.7	8,625.6
II—Cent.	6	113.44	12.06	3.32	680.61	78,084.9	13,014.2
Total	12	101.40	23.19	4.52	1,216.82	129,838.6	10,819.9
Western							
I—Cent.	8	129.68	28.53	6.80	1,037.42	141,047.1	17,630.9
II—Cent.	3	114.30	7.65	2.98	342.91	39,369.0	13,123.0
Total	11	125.48	25.79	5.24	1,380.33	180,416.1	16,410.5
All Cent.	140	90.57	3.09	.18	12,679.67	1,282,270.4	9,159.1

INDEX NO. 6

Percentage Teachers' Salaries Are of Current Expenses

Eastern							
I—Cent.*	37	64.1	4.81	.53	2,272.7	152,883.6	4,132.0
II—Cent.†	14	64.4	3.45	.62	902.1	58,229.6	4,159.3
Total	51	64.2	4.22	.40	3,274.8	211,113.2	4,139.5
Southern							
I—Cent.	18	69.1	4.87	.77	1,244.0	86,373.8	4,798.5
II—Cent.	10	70.7	3.70	.79	707.1	50,121.8	5,012.2
Total	28	69.7	4.09	.52	1,951.1	136,495.6	4,874.8
Great Lakes							
I—Cent.	34	61.9	5.91	.68	2,104.5	131,459.6	3,866.5
II—Cent.	4	62.2	4.13	1.39	248.9	15,543.6	3,885.9
Total	38	63.3	3.92	.68	949.2	60,334.1	4,022.3
Great Plains							
I—Cent.	6	60.3	7.86	2.16	361.8	22,186.8	3,697.8
II—Cent.	6	64.5	1.56	.43	386.7	24,976.1	4,162.7
Total	12	62.4	6.04	1.18	748.5	47,162.9	3,930.2
Western							
I—Cent.	8	67.9	3.42	.82	543.4	36,976.9	4,622.1
II—Cent.	3	67.7	3.77	1.47	203.0	13,792.4	4,597.5
Total	11	67.9	2.23	.45	746.4	50,769.3	4,615.4
All. Cent.	140	64.8	5.78	.33	9,074.2	592,544.2	4,232.5

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE VII *(Continued)*

INDEX NO. 7

Percentage Supervisors' and Principals' Salaries and Expenses Are of Current Expenses

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Cent.*	37	6.9	2.38	.26	256.7	1,971.4	53.3
II—Cent.†	14	7.4	2.43	.44	103.9	849.1	60.7
Total	51	7.1	2.21	.21	360.6	2,820.5	55.3
Southern							
I—Cent.	18	9.8	4.06	.65	175.8	2,024.7	112.5
II—Cent.	10	7.3	1.87	.40	73.4	567.7	56.8
Total	28	8.9	3.66	.47	249.2	2,592.4	92.6
Great Lakes							
I—Cent.	34	7.6	2.56	.30	258.8	2,185.8	64.3
II—Cent.	4	6.0	1.32	.45	24.1	150.9	37.7
Total	38	7.4	2.59	.28	282.9	2,336.7	61.5
Great Plains							
I—Cent.	6	7.7	1.91	.53	46.4	377.5	62.9
II—Cent.	6	7.3	1.02	.28	43.9	326.0	54.3
Total	12	7.5	1.54	.30	90.3	703.5	58.6
Western							
I—Cent.	8	6.8	2.44	.58	54.2	417.4	52.2
II—Cent.	3	7.0	2.20	.45	22.8	175.0	58.3
Total	11	7.0	2.20	.45	77.0	592.4	53.9
All Cent.	140	7.6	2.62	.15	1,060.0	9,045.5	64.6

INDEX NO. 8

Percentage General Control Is of Current Expenses

Eastern							
II—Cent.†	14	2.8	1.03	.18	38.5	124.8	8.9
I—Cent.*	37	3.1	1.14	.13	116.0	403.3	10.9
Total	51	3.1	.87	.08	154.5	528.1	10.4
Southern							
I—Cent.	18	3.9	1.56	.25	70.9	317.6	17.6
II—Cent.	10	3.2	.98	.21	32.3	112.0	11.2
Total	28	3.7	1.28	.16	103.2	429.6	15.3
Great Lakes							
I—Cent.	34	4.0	.88	.10	134.3	570.2	16.8
II—Cent.	4	2.85	.50	.17	11.4	33.5	8.4
Total	38	3.8	1.29	.13	145.7	603.7	15.9
Great Plains							
I—Cent.	6	4.0	7.5	.21	23.7	99.4	16.6
II—Cent.	6	4.5	2.12	.58	27.2	148.4	24.7
Total	12	4.2	1.73	.34	50.9	247.8	20.7
Western							
I—Cent.	8	3.0	1.45	.35	24.3	88.9	11.1
II—Cent.	3	3.3	.42	.16	9.9	33.2	11.1
Total	11	3.1	1.22	.25	34.2	122.1	11.1
All Cent.	140	3.5	6.35	.36	488.5	7,364.6	52.6

*Cities 30,000 to 70,000 population.
†Cities 70,000 to 250,000 population.

TABLE VIII

COMPUTATION OF THE S.D., $P.E._m$ ETC., OF COÖRDINATED SCHOOLS

INDEX NO. 1

Teacher-Pupil Ratio, Elementary Grades

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Coör.*	13	30.7	3.34	.63	399.0	12,399.4	953.80
II—Coör.†	13	33.5	4.12	.77	436.0	14,811.0	1,139.31
Total	26	32.1	4.02	.53	835.0	27,210.4	1,046.55
Southern							
I—Coör.	7	34.9	7.98	2.03	244.6	8,971.9	1,281.70
II—Coör.	6	31.8	2.46	.91	190.6	6,103.7	1,017.28
Total	13	33.5	6.12	1.14	435.2	15,075.6	1,159.66
Great Lakes							
I—Coör.	9	27.6	6.44	1.45	248.3	7,228.8	803.20
II—Coör.	6	29.2	3.37	.93	175.1	5,183.9	863.98
Total	15	28.2	5.68	.99	423.4	12,412.7	827.51
Great Plains							
I—Coör.	4	29.2	4.16	1.40	116.8	3,479.8	869.95
II—Coör.	4	30.5	3.19	1.08	121.8	3,761.7	940.43
Total	8	29.8	4.14	.81	238.6	7,241.5	905.19
Western							
I—Coör.	3	24.5	2.45	.95	73.6	1,815.6	605.20
II—Coör.	1	28.9					
Total	4	25.6	2.71	.91	102.5	2,650.8	622.70
All Coör.	66	30.8	5.48	.45	2,034.7	64,591.0	978.65

INDEX NO. 2

Teacher-Pupil Ratio in Secondary Grades

Eastern							
I—Coör.*	13	24.1	4.28	.80	312.9	7,788.3	599.10
II—Coör.†	13	22.5	4.89	.91	292.1	6,891.7	530.13
Total	26	23.3	5.97	.79	605.0	14,680.0	564.62
Southern							
I—Coör.	7	22.3	2.51	.64	156.3	3,525.2	503.60
II—Coör.	6	23.1	5.28	1.96	138.3	3,368.7	561.45
Total	13	22.7	3.87	.72	294.6	6,893.9	530.30
Great Lakes							
I—Coör.	9	20.3	2.09	.47	182.6	3,748.1	416.46
II—Coör.	6	23.9	3.01	.83	143.1	3,484.7	580.78
Total	15	21.7	3.36	.59	325.7	7,232.8	482.19
Great Plains							
I—Coör.	4	22.3	.44	.15	89.0	1,989.9	497.48
II—Coör.	4	20.4	2.08	.70	81.4	1,682.0	420.50
Total	8	21.3	2.30	.45	170.4	3,671.9	458.99
Western							
I—Coör.	3	23.3	4.92	1.92	69.8	1,701.3	567.10
II—Coör.	1	22.3					
Total	4	23.0	4.54	1.53	92.1	2,198.6	549.65
All Coör.	66	22.5	3.17	.26	1,487.8	99,772.4	1,511.70

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE VIII *(Continued)*

INDEX NO. 8

Percentage Secondary Teachers Are of Total Teachers in Day Schools

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Coör.*	13	19.2	4.31	.81	249.8	5,033.7	387.21
II—Coör.†	13	21.8	6.31	1.18	283.7	6,695.8	515.06
Total	26	20.5	5.56	.74	533.5	11,729.5	451.14
Southern							
I—Coör.	7	19.1	3.37	.86	133.7	2,633.2	376.17
II—Coör.	6	20.2	3.31	1.23	120.9	2,513.9	418.98
Total	13	19.6	3.43	.64	254.6	5,147.1	395.93
Great Lakes							
I—Coör.	9	25.6	7.68	1.73	230.5	6,428.5	714.28
II—Coör.	6	18.3	4.62	1.27	109.7	2,137.4	356.23
Total	15	22.7	7.47	1.30	340.2	8,565.9	571.06
Great Plains							
I—Coör.	4	22.0	.53	.18	88.1	1,949.1	487.28
II—Coör.	4	22.3	1.81	.61	89.0	2,002.3	500.58
Total	8	22.1	2.35	.46	177.1	3,951.4	493.93
Western							
I—Coör.	3	21.7	3.02	1.18	65.2	1,440.0	480.00
II—Coör.	1	26.7					
Total	4	23.0	3.04	1.03	91.9	2,152.9	538.23
All Coör.	66	21.2	5.34	.44	1,397.3	31,546.8	477.98

INDEX NO. 4

Percentage Average Daily Attendance in Secondary Schools Is of Average Daily Attendance of Day Schools

Eastern							
I—Coör.*	13	15.7	4.29	.80	204.0	3,443.7	264.90
II—Coör.†	13	15.2	3.01	.56	197.7	3,121.7	240.13
Total	26	15.5	3.50	.46	401.7	6,565.4	252.52
Southern							
I—Coör.	7	13.6	3.61	.92	95.2	1,386.0	198.00
II—Coör.	6	15.7	4.45	1.65	93.9	1,597.8	266.30
Total	13	14.5	4.39	.82	189.1	2,983.8	229.52
Great Lakes							
I—Coör.	9	21.3	8.62	1.94	191.9	4,751.5	527.95
II—Coör.	6	15.3	3.56	.98	92.0	1,480.5	246.75
Total	15	18.9	7.63	1.33	283.9	6,232.0	415.47
Great Plains							
I—Coör.	4	17.8	1.05	.35	71.3	1,271.8	317.95
II—Coör.	4	16.1	1.30	.44	64.2	1,043.6	260.90
Total	8	16.9	1.95	.38	135.5	2,315.4	289.43
Western							
I—Coör.	3	20.3	1.97	.77	60.8	1,247.9	415.97
II—Coör.	1	21.9					
Total	4	20.7	1.84	.62	82.7	1,727.5	431.88
All Coör.	66	16.6	2.96	.25	1,092.9	75,912.1	1,150.18

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE VIII *(Continued)*

INDEX NO. 5

Amount Spent Per Pupil in Average Daily Attendance on Basis of Current Expenses

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Coör.*	13	88.27	16.54	3.08	1,147.5	104,847.3	8,065.18
II—Coör.†	13	92.22	26.65	4.99	1,198.9	119,790.3	9,214.64
Total	26	90.25	22.25	2.94	2,346.4	224,637.6	8,639.91
Southern							
I—Coör.	7	63.32	15.05	3.84	443.3	29,651.7	4,235.96
II—Coör.	6	73.63	19.28	7.18	441.8	34,758.5	5,793.08
Total	13	68.08	17.88	3.34	885.0	64,410.2	4,954.63
Great Lakes							
I—Coör.	9	113.73	26.67	6.22	1,023.6	123,302.1	13,700.23
II—Coör.	6	96.12	17.89	4.93	576.7	57,356.3	9,559.38
Total	15	106.68	25.75	4.48	1,600.3	180,658.4	12,043.89
Great Plains							
I—Coör.	4	115.51	22.41	7.56	462.0	55,380.2	13,845.05
II—Coör.	4	89.81	31.21	10.53	359.2	36,160.1	9,040.03
Total	8	102.66	32.14	6.26	821.3	91,540.3	11,442.54
Western							
I—Coör.	3	113,88	10.15	3.95	341.6	39,214.9	13,071.63
II—Coör.	1	91.94					
Total	4	108.39	12.98	4.38	433.6	47,667.9	11,916.98
All Coör.	66	92.22	2.67	.22	6,086.5	608,914.4	9,225.98

INDEX NO. 6

Percentage Teachers' Salaries Are of Current Expenses

Eastern							
I—Coör.*	13	63.3	4.63	.87	822.9	52,367.7	4,028.29
II—Coör.†	13	62.7	4.95	.93	815.1	51,424.9	3,955.76
Total	26	63.0	4.80	.63	1,638.0	103,792.6	3,992.02
Southern							
I—Coör.	7	66.1	5.34	1.36	462.4	30,784.0	4,397.72
II—Coör.	6	73.8	6.35	2.36	442.7	32,920.6	5,486.77
Total	13	69.6	7.50	1.40	905.1	63,704.6	4,900.35
Great Lakes							
I—Coör.	9	62.5	4.15	.93	562.4	35,311.0	3,923.45
II—Coör.	6	64.5	3.20	.88	386.8	25,023.1	4,170.51
Total	15	63.3	3.92	.68	949.2	60,334.1	4,022.27
Great Plains							
I—Coör.	4	59.7	2.19	.74	238.7	14,275.5	3,568.88
II—Coör.	4	64.6	3.12	1.05	258.5	16,731.5	4,182.88
Total	8	62.2	2.65	.52	497.2	31,007.0	3,875.88
Western							
I—Coör.	3	59.5	5.83	2.27	178.5	10,722.6	3,574.20
II—Coör.	1	68.5					
Total	4	61.8	5.87	1.98	247.0	15,414.9	3,853.73
All Coör.	66	64.2	5.81	.48	4,236.5	274,253.2	4,155.35

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE VIII *(Continued)*

INDEX NO. 7

Percentage Supervisors' and Principals' Salaries and Expenses Are of Current Expenses

Group	Number of Cities	Mean	S.D.	$P.E._{m}$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Coör.*	13	5.8	1.94	.36	75.9	486.5	37.42
II—Coör.†	13	6.5	2.26	.42	84.1	616.7	47.43
Total	26	6.1	2.29	.30	160.0	1,103.2	42.43
Southern							
I—Coör.	7	9.4	1.67	.43	65.9	638.1	91.15
II—Coör.	6	8.1	3.55	1.32	48.6	469.3	78.22
Total	13	8.8	2.78	.51	114.5	1,107.4	85.19
Great Lakes							
I—Coör.	9	7.0	2.59	.58	63.4	501.6	55.73
II—Coör.	6	6.4	1.93	.53	38.5	268.1	44.69
Total	15	6.8	2.25	.39	101.9	769.7	51.31
Great Plains							
I—Coör.	4	8.55	.45	.15	34.2	293.2	73.30
II—Coör.	4	5.7	1.35	.46	22.8	137.2	34.30
Total	8	7.1	1.84	.37	57.0	430.4	53.80
Western							
I—Coör.	3	8.9	1.82	.71	26.7	247.6	82.53
II—Coör.	1	6.8					
Total	4	8.4	1.70	.57	33.5	293.8	73.45
All Coör.	66	7.1	2.39	.20	466.9	3,704.5	56.13

INDEX NO. 8

Percentage General Control Is of Current Expenses

Eastern							
I—Coör.*	13	3.7	1.40	.26	47.9	203.5	15.65
II—Coör.†	13	3.2	1.48	.28	41.0	161.3	12.41
Total	26	3.4	1.57	.21	88.9	364.8	14.03
Southern							
I—Coör.	7	3.2	1.15	.29	22.7	80.9	11.55
II—Coör.	6	3.1	2.06	.76	18.8	83.2	13.87
Total	13	3.2	1.54	.29	41.5	164.1	12.62
Great Lakes							
I—Coör.	9	3.9	.57	.13	34.7	139.9	15.54
II—Coör.	6	3.2	.92	.25	19.2	67.5	11.08
Total	15	3.6	.93	.16	53.9	207.4	13.83
Great Plains							
I—Coör.	4	3.8	2.54	.86	15.3	83.5	20.88
II—Coör.	4	3.9	.66	.22	15.5	62.6	15.65
Total	8	3.9	1.75	.34	30.8	146.1	18.26
Western							
I—Coör.	3	5.4	1.21	.47	16.3	91.9	30.63
II—Coör.	1	2.6					
Total	4	4.7	1.61	.54	18.9	98.7	24.68
All Coör.	66	3.5	5.56	.46	234.0	2,847.7	43.15

*Cities 30,000 to 70,000 population.
†Cities 70.000 to 250,000 population.

TABLE IX

Computation of the Critical Ratio

Comparison of Centralized and Coördinated schools, Class I, 30,000 to 70,000, and Class II, 70,000 to 250,000, in each geographical section and for indexes 1 to 4. Critical ratios starred are Coördinated schools.

Group	Index 1		Index 2		Index 3		Index 4	
	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.
Eastern								
I	.83	1.93*	.94	1.92*	.94	2.24	.96	1.67
II	1.31	3.15*	1.03	.49	1.51	2.78*	.95	.84*
Total	.71	4.09*	.87	.92*	.87	.23*	.65	1.54
Southern								
I	2.27	.05*	.99	1.11	1.40	2.50	1.24	2.58
II	1.57	1.21	2.03	.10	1.66	1.39*	1.77	1.53*
Total	1.68	.22	.91	.66	1.08	1.20	1.04	.87
Great Lakes								
I	1.52	.99	.74	.14	1.91	.11*	2.09	.91*
II	1.53	1.57	1.11	.72	1.57	.77	1.09	.55
Total	1.10	1.00	.81	1.11*	1.51	1.39	1.49	1.34
Great Plains								
I	1.84	.66	.76	2.24*	2.26	2.70	1.73	1.85
II	1.27	1.50*	.74	.68*	1.18	.60	.93	1.40
Total	1.08	.28*	.67	1.65*	1.37	2.56	1.07	2.15
Western								
I	1.12	2.77	2.57	2.02*	1.99	3.27	1.55	.13
II	------	------	------	------	------	------	------	----
Total	1.43	2.59	1.65	2.61*	1.55	3.04	1.30	.62*
Grand Total	.54	1.12*	.36	2.23*	.59	2.38	.41	2.20

Comparison of Centralized and Coördinated schools, Class I, 30,000 to 70,000, and Class II, 70,000 to 250,000, in each geographical section and for indexes 5 to 8. Critical ratios starred are Coördinated schools.

Group	Index 5		Index 6		Index 7		Index 8	
	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.
Eastern								
I	4.18	.99	1.02	.79	.44	2.50	.29	2.07
II	6.01	.79	1.12	1.52	.61	1.48	.34	1.18*
Total	3.70	.92	.75	1.60	.37	2.71	.22	1.36*
Southern								
I	.4.90	1.73*	1.56	1.92	.78	.51	.38	1.84
II	7.86	2.41*	2.49	1.25*	1.38	.58*	.79	.13
Total	4.03	3.30*	1.49	.07	.70	.14	.33	1.51
Great Lakes								
I	7.06	2.01*	1.15	.52*	.65	.93	.16	.63
II	5.65	.20	1.64	1.40*	.70	.57*	.30	1.17*
Total	5.39	1.37*	.95	1.47*	.48	1.25	.21	.95
Great Plains								
I	10.28	2.54*	2.28	.26	.55	1.55*	.89	.23
II	11.03	2.14	1.13	.09*	.54	2.97	.62	.97
Total	7.72	.16*	1.29	.16	.48	.84	.48	.63
Western								
I	7.86	2.01	2.41	3.49	.92	2.29*	.59	4.07*
II	------	------	------	------	------	------	------	------
Total	6.83	2.50	2.03	3.01	.73	1.92*	.60	2.67*
Grand Total	.28	5.90*	.58	1.04	.25	2.00	.58	0

*Coördinated Schools.

Functions of School Administration

The second measure used in this study was taken from The Functions of School Administration as given on page 124 of "The Status of the Superintendent."[4] These ten functions with weight given to each subdivision are as follows:

TABLE X

Functions	Weight
1. Appointment of	
a. Assistant superintendents	2
b. Principals	2
c. Teachers	2
d. Janitors	2
e. Clerks	2
	10
2. Preparation of the budget	10
3. Transfer of	
a. Principal and teachers	5
b. Other employees	5
	10
4. Dismissal of	
a. Principals and teachers	5
b. Other employees	5
	10
5. Attendance	
a. Taking census	5
b. Enforcing compulsory attendance laws	5
	10
6. Buildings and grounds	
a. Purchase and sale	3
b. Approving architect's plans	4
c. Maintenance of buildings	3
	10
7. Determination of curricula	10

[4] "The Status of the City Superintendent," in *First Year Book* of the Department of Superintendence of the National Education Association, 1923.

TABLE X *(Continued)*

Functions	Weight
8. Selection of	
a. Textbooks	5
b. Supplies	5
	10
9. Determining new policies	10
10. Direction and supervision of	
a. Classroom instruction	4
b. Continuation schools	3
c. Evening schools	3
	10

On page 10 of the above report, the purpose of the study is stated as follows:

> Objectives of this study—The objectives for which this study was undertaken were:
>
> (1) To determine the status of the superintendent of schools with reference to training, experience, and tenure.
>
> (2) To determine the facts regarding the financial compensation of the superintendent of schools.
>
> (3) To determine the professional activities in which the superintendent of schools is engaged.
>
> (4) To determine as far as possible the economic status of the superintendent.
>
> (5) To determine the interrelationships between elements mentioned above.

The conclusions of the above study so far as they pertain to the purposes of this study are the following:

> 4. The superintendent should have power to initiate and execute the appointments of assistant superintendents, business managers, principals, teachers, and all other employees whose work is vital in the development of an educational program.
>
> 5. Authority to initiate the transfer and dismissal of educational workers is as essential as the power of appointment.
>
> 6. To facilitate the development of a program for educational improvement, the budget should be prepared under the direction of the superintendent and his advisors for approval by the board of education.
>
> 7. Duties which have to do with the maintenance and repairs of buildings and grounds should be performed by the super-

visor of buildings and grounds under the direction of the superintendent, or by the superintendent when there is no such official.

8. In any building program the superintendent should have an active part. His acquaintance with the needs of the schools will make it possible for him to help the city plan more wisely. As the expert advisor of the board of education and the educational leader of the city, the superintendent should have authority to initiate new policies.

9. To improve the organization of the educational system and to help in making new policies permanent, the superintendent should likewise have authority to intiate the making of rules and regulations governing routine matters.

* * * * * * * * *

11. Supervision of instruction should be carried on through supervisors and principals under the direction and leadership of the superintendent. The superintendent should not relinquish his supervisory function even in the larger cities. The fact that this authority has to be performed indirectly in the larger cities should not mean that the superintendent is removed from direct contact with the schools. In order that the superintendent's leadership in supervision may be wisest it should be based upon a first-hand knowledge of conditions in the schools.

12. All the subordinate functions which have to do with the supervision of instruction, such as providing textbooks and supplies, should be made available through an official who is responsible to the superintendent for the proper performance of his duties.

13. Enforcement of compulsory attendance laws should be under the direction of a chief attendance officer who is likewise responsible to the superintendent.

14. The keeping of a continuous census should be under the direction of a chief attendance officer responsible to the superintendent.

15. Supplementary educational activities, such as continuation schools, evening schools, and civic center activities should be under the direction of the superintendent, or of an official who is responsible to him.

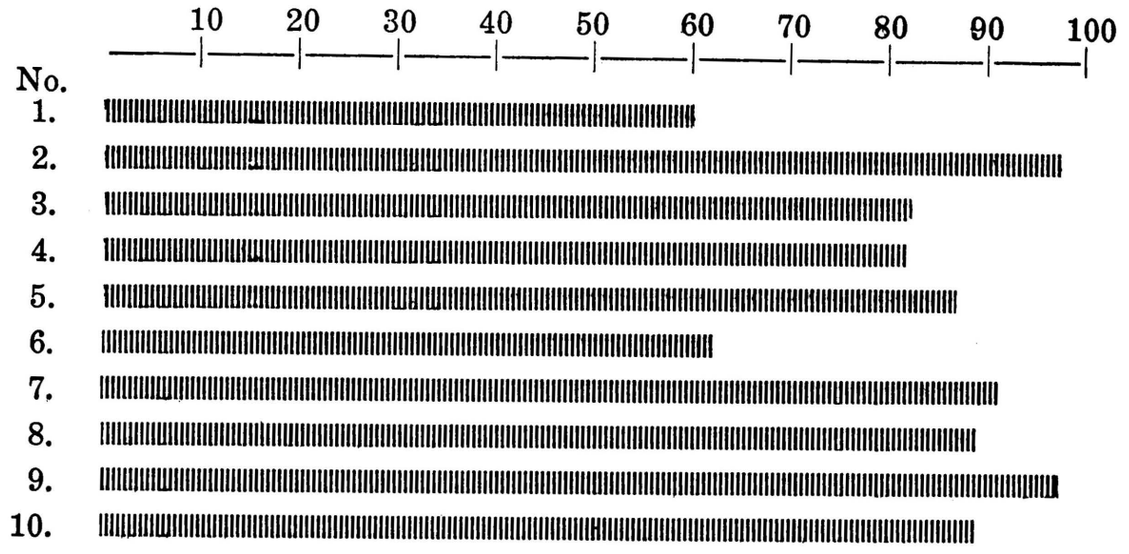
These functions for the Centralized and Coördinated schools are shown graphically in Diagram 19. The percentage of each function as exercised is designated.

DIAGRAM 11

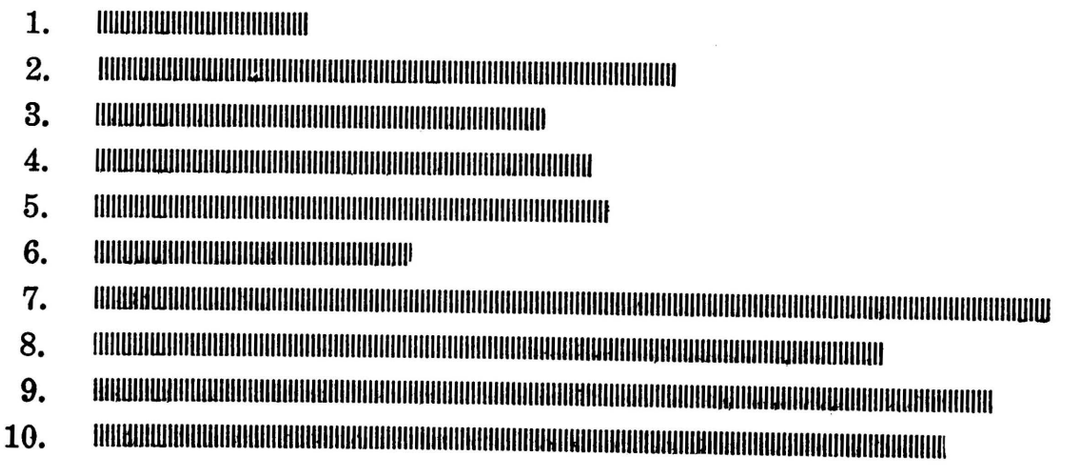
THE FUNCTIONS OF ADMINISTRATION

Showing the percentage of each function exercised

CENTRALIZED



COÖRDINATED



OBSERVATIONS ON CERTAIN PHASES OF PUBLIC SCHOOL ORGANIZATIONS

The questionnaire on the Functions of Administration that was sent to the superintendents of cities in the study did not ask for any expression of opinion regarding the wisdom of centralizing or coördinating these functions.

But some of the superintendents sent letters with the questionnaire and the comments that follow have an application to some of the problems involved in this study. Other comments relate to the reactions of some of the superintendents to questionnaires in general and to this one in particular. It would serve no useful purpose to name the cities represented in these excerpts:

In ———— we have a district system which makes comparison with other cities on some matters unsatisfactory.

The elementary schools are managed by nine school districts, each of which build and equip schools and maintain them, hire teachers, and purchase all supplies except textbooks.

The high schools are under the management of a high-school committee of five, which has powers over the high school somewhat similar to those of the district committee over elementary schools.

Construction of new high-school buildings, however, is in the hands of a special High School Plan and Building Commission of ten members. In some districts, new construction is also placed in the hands of a special building committee.

The board of education conducts sewing, cooking, and woodworking classes in the district schools, maintains an outdoor school, an ungraded school, all evening schools, and a bureau of adult education. It also cares for the truancy problem.

The board of education, in its supervisory capacity, approves courses of study for the city, which includes the subject matter and the time which shall be spent—approves textbooks, approves certification of teachers, and approves plans for new construction. It also establishes the rules for the government of the schools.

The answering of this questionnaire presents the usual embarrassment of questionnaires.

Theoretically, the execution of most of the functions lies with the superintendent. Such items as are starred appear in the docket for the committee's meetings as "Recommendations of the Superintendent." Almost never is there a question about these items.

While the school system is indicated as "wholly independent" the care of the school grounds is in the hands of the park department of the town and repairs of the *outside* of school buildings is in the hands of the building department of the town.

Our business department is pretty well separated from the educational department. We have good harmony and coöperation, however.

Where I have written Bd. of Ed. it has been to indicate "final approval." We can "execute" these duties but the approval is very essential—a little unusually so for a town of our size.

In regard to the enclosed questionnaire, I would say that the most of the items mentioned there are handled without reference to the board of education. In general, a need is brought to the board of education by the superintendent. This is authorized by the board and then it is left to the superintendent to execute this authorization. Many of these things have been reduced to matters of routine in our system but where a change in the policy is necessary this is presented to the board of education for their approval and if approved is executed by the superintendent as a matter of routine from that time until some other change in the policy is necessary.

I congratulate you upon this questionnaire. Someone evidently thought more than once before mailing it to a long suffering public. I am filling out two or three a week, and for once the burden has become a joy. Thanks.

Our board is organized by committees. Committee on teachers, schools, and school books finally approves 1, 3, 4, 7, and 8, but is almost always guided by recommendations of the superintendent.

Secretary-treasurer as business manager has charge of maintenance and operation of plant and is the purchasing officer.

I am returning enclosed answers to the questionnaire recently received regarding fiscal administration of our schools. As our organization is directly under a commission form of government, with one of the commissioners at the head of the department of education, I am adding a word of explanation regarding the replies given.

Question 1: While I have checked "c," I am inclined to think that the answer might be "b" (Wholly Dependent). The department of education is a department of the city government. While, of course, we receive funds and have some supervision of special aid for classes carried on through state aid, actual administration might be considered wholly dependent on the city.

Question 2: Under the charter and general form of organization, the superintendent of schools is at the head of the division of schools, which is one of the three divisions directly in charge of the city commissioner of education; but fiscal responsibility and in fact the final responsibility in the whole department lies directly in the hands of the commissioner and fiscal

administration is carried on by the deputy commissioner, who is in fact business manager.

Question 3: All appointments are ratified by the commissioner of education, but all appointments in the instructional administration are recommended by the superintendent and practically the completion of the arrangements for teaching staff are under his charge. After the completion, arrangement for financial administration involved in the maintenance of buildings and enlargement of plant is under the direct charge of the deputy commissioner of education.

. . . . In practice the board of education of this city is wholly independent of the city authorities in preparing the budget for the annual support of the schools. That is to say, there is no authority in the city that can either increase or diminish the budget without the approval of the board of education. On the other hand, in the purchase of land and the erection of buildings, funds are provided by the city council. It would be entirely correct, therefore, to answer A affirmatively, B negatively in part, and C affirmatively.

The same thing is true of the questions on the second page of the blanks. There is a uniform state law governing all the city schools of the state. This law provides that the superintendent of schools is the chief officer of the board of education. This, of course, means that all other officers are more or less subject to his authority. At the same time it would not be correct to say that the superintendent of schools can appoint subordinates, for the reason that the law gives him power to nominate, although the board of education has no authority to appoint any teacher not nominated by the superintendent of schools—and so on.

The enclosed questionnaire as checked for ———— would indicate a larger initiative power on the part of the superintendent than is correct. The initiative in the various functions of school administration is taken by the superintendent, but nearly all of these items are subject to the approval by the board. The responsibility of buildings, janitors, business accounts, purchases, etc., is vested in a clerk of the board.

The Application of the Second Measure of Efficiency: the Functions of Public School Administration

The procedure here is identical with that of the application of the index number as given above on page 62.

The following tables show the computation of the critical ratio as applied to the five geographical groups with their subdivisions into size of cities and types of administration.

The tables following are identical in nature and arrangement with that of the tables for the computation of the critical ratio of the index number, Tables VII, VIII, and IX.

TABLE XI

FUNCTION No. 1

Appointment of Assistant Superintendents, Principals, Teachers, Janitors, and Clerks

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Cent.*	37	8.97	1.67	.19	332	3,080	83.24
II—Cent.†	14	9.14	1.01	.18	128	1,184	84.57
Total	51	9.02	1.50	.14	460	4,264	83.61
Southern							
I—Cent.	18	8.67	1.62	.26	156	1,400	77.78
II—Cent.	10	9.40	1.28	.27	94	900	90.00
Total	28	8.93	1.55	.20	250	2,300	82.14
Great Lakes							
I—Cent.	34	9.24	1.04	.12	314	2,940	86.47
II—Cent.	4	9.50	.87	.29	38	364	91.00
Total	38	9.26	1.10	.12	352	3,304	86.95
Great Plains							
I—Cent.	6	8.00	1.15	.32	48	392	65.33
II—Cent.	6	9.00	1.00	.34	54	492	82.00
Total	12	8.50	1.19	.23	102	884	73.67
Western							
I—Cent.	8	8.75	1.71	.41	70	636	79.50
II—Cent.	3	8.67	1.87	.73	26	236	78.67
Total	11	8.73	1.75	.54	96	872	79.27
All Cent.	140	9.00	1.42	.08	1,260	11,624	83.03

FUNCTION No. 2

Preparation of the Budget

Eastern							
I—Cent.*	37	10.00	.....	....	370	3,700	100.00
II—Cent.†	14	10.00	.....	....	140	1,400	100.00
Total	51	10.00	.....	....	510	5,100	100.00
Southern							
I—Cent.	18	9.44	2.31	.37	170	1,700	94.45
II—Cent.	10	9.00	3.00	.64	90	900	90.00
Total	28	9.29	2.56	.33	260	2,600	92.86
Great Lakes							
I—Cent.	34	9.12	2.83	.33	310	3,100	91.18
II—Cent.	4	10.00	.....	....	40	400	100.00
Total	38	9.21	2.70	.30	350	3,500	92.11
Great Plains							
I—Cent.	6	10.00	.....	....	60	600	100.00
II—Cent.	6	10.00	.....	....	60	600	100.00
Total	12	10.00	.....	....	120	1,200	100.00
Western							
I—Cent.	8	10.00	.....	....	80	800	100.00
II—Cent.	3	10.00	.....	....	30	300	100.00
Total	11	10.00	.....	....	110	1,100	100.00
All Cent.	140	9.64	1.87	.11	1,350	13,500	96.43

*Cities 30,000 to 70,000 population.
†Cities 70,000 to 250,000 population.

TABLE XI *(Continued)*

FUNCTION No. 3

Transfer of Principals and Teachers and Other Employees

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Cent.*	37	8.92	2.05	.23	330	3,100	83.78
II—Cent.†	14	8.93	2.05	.37	125	1,175	83.93
Total	51	8.92	2.06	.19	455	4,275	83.82
Southern							
I—Cent.	18	8.33	2.37	.38	150	1,350	75.00
II—Cent.	10	10.00			100	1,000	100.00
Total	28	8.93	2.05	.26	250	2,350	83.93
Great Lakes							
I—Cent.	34	8.97	2.36	.27	305	2,925	86.03
II—Cent.	4	10.00			40	400	100.00
Total	38	9.08	2.25	.25	345	3,325	87.50
Great Plains							
I—Cent.	6	10.00			60	600	100.00
II—Cent.	6	10.00			60	600	100.00
Total	12	10.00			120	1,200	100.00
Western							
I—Cent.	8	9.38	1.63	.39	75	725	90.63
II—Cent.	3	8.33	2.37	.92	25	225	75.00
Total	11	9.09	1.93	.39	100	950	86.36
All Cent.	140	9.07	2.04	.12	1,270	12,100	86.43

FUNCTION No. 4

Dismissal of Principals and Teachers and Other Employees

Eastern							
I—Cent.*	37	8.65	2.50	.28	320	3,000	81.08
II—Cent.†	14	8.93	2.79	.50	125	1,225	87.50
Total	51	8.73	2.57	.24	445	4,225	82.84
Southern							
I—Cent.	18	8.61	2.79	.44	155	1,475	81.94
II—Cent.	10	9.50	1.50	.32	95	925	92.50
Total	28	8.93	2.44	.31	250	2,400	85.71
Great Lakes							
I—Cent.	34	9.12	1.89	.22	310	2,950	86.76
II—Cent.	4	8.75	2.17	.73	35	325	81.25
Total	8	9.08	1.93	.21	345	3,275	86.18
Great Plains							
I—Cent.	6	10.00			60	600	100.00
II—Cent.	6	10.00			60	600	100.00
Total	12	10.00			120	1,200	100.00
Western							
I—Cent.	8	9.38	1.63	.39	75	725	90.63
II—Cent.	3	8.33	2.37	.92	25	225	75.00
Total	11	9.09	1.93	.39	100	950	86.36
All Cent.	140	9.00	2.25	.13	1,260	12,050	86.07

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XI *(Continued)*

FUNCTION No. 5

Taking the Census and Enforcing Compulsory Attendance Laws

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Cent.*	37	9.46	1.55	.17	350	3,400	91.89
II—Cent.†	14	9.64	1.31	.24	135	1,325	94.64
Total	51	9.51	1.49	.14	485	4,725	92.65
Southern							
I—Cent.	18	8.89	2.66	.42	160	1,550	86.11
II—Cent.	10	9.00	2.00	.43	90	850	85.00
Total	28	8.93	2.44	.31	250	2,400	85.71
Great Lakes							
I—Cent.	34	9.71	1.14	.13	330	3,250	95.59
II—Cent.	4	10.00	.....	....	40	400	100.00
Total	38	9.74	1.09	.12	370	3,650	96.05
Great Plains							
I—Cent.	6	10.00	.....	....	60	600	100.00
II—Cent.	6	9.17	1.85	.51	55	525	87.50
Total	12	9.58	1.40	.27	115	1,125	93.75
Western							
I—Cent.	8	9.36	1.63	.39	75	725	90.63
II—Cent.	3	8.33	2.37	.92	25	225	75.00
Total	11	9.09	1.93	.39	100	950	86.36
All Cent.	140	9.43	1.69	.10	1,320	12,850	91.79

FUNCTION No. 6

Purchase and Sale of Buildings and Grounds, Approving Architect's Plans, Maintenance of Buildings

Eastern							
I—Cent.*	37	6.65	4.17	.46	246	2,280	61.62
II—Cent.†	14	5.93	4.57	.82	83	785	56.07
Total	51	6.45	4.30	.41	329	3,065	60.10
Southern							
I—Cent.	18	8.78	2.45	.39	158	1,496	83.11
II—Cent.	10	8.10	3.01	.64	81	747	74.70
Total	28	8.54	2.68	.34	239	2,243	80.11
Great Lakes							
I—Cent.	34	7.88	2.90	.34	268	2,398	70.51
II—Cent.	4	10.00	.....	....	40	400	100.00
Total	38	8.11	2.80	.31	308	2,798	73.63
Great Plains							
I—Cent.	6	10.00	.....	....	60	600	100.00
II—Cent.	6	9.50	1.12	.31	57	549	91.50
Total	12	9.75	.83	.16	117	1,149	95.75
Western							
I—Cent.	8	8.88	2.07	.49	71	665	83.13
II—Cent.	3	8.00	2.83	1.10	24	216	72.00
Total	11	8.64	2.33	.47	95	881	80.09
All Cent.	140	7.77	3.47	.20	1,088	10,136	72.40

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XI *(Continued)*

FUNCTION No. 7

Determination of Curricula

Group	Number of Cities	Mean	S.D.	P.E.$_m$	Sum of Means	Sum of Mean^2	Average of Mean^2
Eastern							
I—Cent.*	37	9.19	2.73	.30	340	3,400	91.89
II—Cent.†	14	10.00	.....	....	140	1,400	100.00
Total	51	9.41	2.36	.22	480	4,800	94.12
Southern							
I—Cent.	18	7.61	4.13	.66	137	1,349	74.95
II—Cent.	10	9.00	3.00	.64	90	900	90.00
Total	28	8.11	3.81	.49	227	2,249	80.32
Great Lakes							
I—Cent.	34	9.71	1.67	.19	330	3,300	97.06
II—Cent.	4	10.00	.....	....	40	400	100.00
Total	38	9.74	1.58	.17	370	3,700	97.37
Great Plains							
I—Cent.	6	10.00	.....	....	60	600	100.00
II—Cent.	6	8.33	3.73	1.03	50	500	83.34
Total	12	9.17	2.75	.54	110	1,100	91.67
Western							
I—Cent.	8	10.00	.....	....	80	800	100.00
II—Cent.	3	10.00	.....	....	30	300	100.00
Total	11	10.00	.....	....	110	1,100	100.00
All Cent.	140	9.26	2.60	.15	1,297	12,949	92.49

FUNCTION No. 8

Selection of Textbooks and Supplies

Eastern							
I—Cent.*	37	9.87	.74	.08	365	3,625	97.97
II—Cent.†	14	10.00	.....	....	140	1,400	100.00
Total	51	9.90	1.00	.09	505	5,025	99.02
Southern							
I—Cent.	18	7.22	3.43	.55	130	1,150	63.89
II—Cent.	10	9.50	1.50	.32	95	925	92.50
Total	28	8.04	3.08	.39	225	2,075	74.11
Great Lakes							
I—Cent.	34	9.71	1.14	.13	330	3,250	95.59
II—Cent.	4	10.00	.....	....	40	400	100.00
Total	38	9.74	1.09	.12	370	3,650	96.05
Great Plains							
I—Cent.	6	9.17	1.85	.51	55	525	87.50
II—Cent.	6	9.17	1.85	.51	55	525	87.50
Total	12	9.17	1.85	.36	110	1,050	87.50
Western							
I—Cent.	8	10.00	.....	....	80	800	100.00
II—Cent.	3	10.00	.....	....	30	300	100.00
Total	11	10.00	.....	....	110	1,100	100.00
All Cent.	140	9.43	1.79	.10	1,320	12,900	92.14

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XI *(Continued)*

FUNCTION No. 9

Determining New Policies

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean^2	Average of Mean^2
Eastern							
I—Cent.*	37	10.00	.....	....	370	3,700	100.00
II—Cent.†	14	10.00	.....	....	140	1,400	100.00
Total	51	10.00	.....	....	510	5,100	100.00
Southern							
I—Cent.	18	10.00	.....	....	180	1,800	100.00
II—Cent.	10	10.00	.....	....	100	1,000	100.00
Total	28	10.00	.....	....	280	2,800	100.00
Great Lakes							
I—Cent.	34	8.82	3.23	.37	300	3,000	88.24
II—Cent.	4	10.00	.....	....	40	400	100.00
Total	38	8.95	3.06	.33	340	3,400	89.47
Great Plains							
I—Cent.	6	10.00	.....	....	60	600	100.00
II—Cent.	6	10.00	.....	....	60	600	100.00
Total	12	10.00	.....	....	120	1,200	100.00
Western							
I—Cent.	8	10.00	.....	....	80	800	100.00
II—Cent.	3	10.00	.....	....	30	300	100.00
Total	11	10.00	.....	....	110	1,100	100.00
All Cent.	140	9.71	1.69	.10	1,360	13,600	97.14

FUNCTION No. 10

Direction and Supervision of Classroom Instruction, Continuation Schools, and Evening Schools

Eastern							
I—Cent.*	37	9.84	1.77	.20	364	3,698	99.95
II—Cent.†	14	9.78	.84	.15	137	1,349	96.36
Total	51	9.82	1.59	.15	501	5,047	98.96
Southern							
I—Cent.	18	9.33	1.62	.26	168	1,614	89.67
II—Cent.	10	10.00	.....	....	100	1,000	100.00
Total	28	9.57	1.33	.17	268	2,614	93.36
Great Lakes							
I—Cent.	34	8.68	2.42	.28	295	2,761	81.21
II—Cent.	4	10.00	.....	....	40	400	100.00
Total	38	8.82	2.32	.25	335	3,161	83.18
Great Plains							
I—Cent.	6	10.00	.....	....	60	600	100.00
II—Cent.	6	10.00	.....	....	60	600	100.00
Total	12	10.00	.....	....	120	1,200	100.00
Western							
I—Cent.	8	10.00	.....	....	80	800	100.00
II—Cent.	3	10.00	.....	....	30	300	100.00
Total	11	10.00	.....	....	110	1,100	100.00
All Cent.	140	9.53	1.71	.10	1,334	13,122	93.73

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XII

FUNCTION No. 1

Appointment of Assistant Superintendents, Principals, Teachers, Janitors, and Clerks

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean^2	Average of Mean^2
Eastern							
I—Coör.*	13	8.31	1.31	.25	108	920	70.77
II—Coör.†	13	7.85	1.21	.23	102	820	63.08
Total	26	8.08	1.28	.17	210	1,740	66.92
Southern							
I—Coör.	7	8.29	1.25	.32	58	492	70.29
II—Coör.	6	9.00	1.00	.28	54	492	82.00
Total	13	8.62	1.18	.22	112	984	75.69
Great Lakes							
I—Coör.	9	8.22	1.49	.34	74	628	69.78
II—Coör.	6	7.00	1.00	.28	42	300	50.00
Total	15	7.73	1.45	.25	116	928	61.87
Great Plains							
I—Coör.	4	5.00	1.00	.34	20	104	26.00
II—Coör.	4	8.00	1.41	.48	32	264	66.00
Total	8	6.50	1.94	.46	52	368	46.00
Western							
I—Coör.	3	6.00	------	----	18	108	36.00
II—Coör.	1	8.00	------	----	8	64	64.00
Total	4	6.50	.87	.29	26	172	43.00
All Coör.	66	7.82	1.54	.13	516	4,192	63.52

FUNCTION No. 2

Preparation of the Budget

Eastern							
I—Coör.*	13	6.92	4.62	.86	90	900	69.23
II—Coör.†	13	8.46	3.61	.68	110	1,100	84.62
Total	26	7.69	4.22	.56	200	2,000	76.92
Southern							
I—Coör.	7	4.29	4.95	1.26	30	300	42.86
II—Coör.	6	6.67	4.71	1.30	40	400	66.67
Total	13	5.38	4.99	.93	70	700	53.85
Great Lakes							
I—Coör.	9	6.67	4.71	1.06	60	600	66.67
II—Coör.	6	3.33	4.72	1.30	20	200	33.33
Total	15	5.33	4.99	.87	80	800	53.33
Great Plains							
I—Coör.	4	7.50	4.33	1.46	30	300	75.00
II—Coör.	4	5.00	5.00	1.69	20	200	50.00
Total	8	6.25	4.84	1.15	50	500	62.50
Western							
I—Coör.	3	------	------	----	----	--------	-------
II—Coör.	1	------	------	----	----	--------	--------
Total	4	------	------	----	----	--------	--------
All Coör.	66	6.06	4.89	.41	400	4,000	60.61

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XII *(Continued)*

FUNCTION No. 3

Transfer of Principals and Teachers and Other Employees

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Coör.*	13	7.69	2.50	.47	100	850	65.39
II—Coör.†	13	8.08	2.42	.45	105	925	71.15
Total	26	7.88	2.49	.33	205	1,775	68.27
Southern							
I—Coör.	7	5.72	3.18	.81	40	300	42.86
II—Coör.	6	9.17	1.85	.51	55	525	87.50
Total	13	7.31	3.19	.60	95	825	63.46
Great Lakes							
I—Coör.	9	7.22	2.49	.56	65	525	58.33
II—Coör.	6	7.50	2.50	.69	45	375	62.50
Total	15	7.33	2.50	.44	110	900	60.00
Great Plains							
I—Coör.	4	5.00	.....	....	20	100	25.00
II—Coör.	4	7.50	2.50	.84	30	250	62.50
Total	8	6.25	2.17	.52	50	350	43.75
Western							
I—Coör.	3	5.00	.....	....	15	75	25.00
II—Coör.	1	5.00	.....	....	5	25	25.00
Total	4	5.00	.....	....	20	100	25.00
All Coör.	66	7.27	2.65	.22	480	3.950	59.85

FUNCTION No. 4

Dismissal of Principals and Teachers and Other Employees

Eastern							
I—Coör.*	13	8.46	2.31	.43	110	1,000	76.92
II—Coör.†	13	7.69	2.50	.47	100	850	65.39
Total	26	8.08	2.42	.32	210	1,850	71.15
Southern							
I—Coör.	7	7.86	2.47	.63	55	475	67.86
II—Coör.	6	8.17	2.87	.79	50	450	75.00
Total	13	8.08	2.42	.45	105	925	71.15
Great Lakes							
I—Coör.	9	7.22	2.49	.56	65	525	58.33
II—Coör.	6	7.50	2.50	.69	45	375	62.50
Total	15	7.33	2.50	.44	110	900	60.00
Great Plains							
I—Coör.	4	6.25	2.17	.73	25	175	43.75
II—Coör.	4	7.50	2.50	.84	30	250	62.50
Total	8	6.88	2.41	.57	55	425	53.13
Western							
I—Coör.	3	6.33	3.15	1.23	20	150	50.00
II—Coör.	1	5.00	.....	....	5	25	25.00
Total	4	6.25	2.17	.44	25	175	43.75
All Coör.	66	7.65	2.50	.21	505	4,275	64.77

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XII *(Continued)*

FUNCTION No. 5

Taking the Census and Enforcing Compulsory Attendance Laws

Group	Number of Cities	Mean	S.D.	$P.E._m$	Sum of Means	Sum of Mean²	Average of Mean²
Eastern							
I—Coör.*	13	8.08	3.12	.58	105	975	75.00
II—Coör.†	13	7.69	2.50	.47	100	850	65.39
Total	26	7.88	2.85	.38	205	1,825	70.19
Southern							
I—Coör.	7	7.86	2.47	.63	55	475	67.86
II—Coör.	6	8.17	2.87	.79	50	450	75.00
Total	13	8.08	2.42	.45	105	925	71.15
Great Lakes							
I—Coör.	9	6.11	3.93	.88	55	475	52.78
II—Coör.	6	7.50	3.82	1.05	45	425	70.83
Total	15	6.67	3.94	.69	100	900	60.00
Great Plains							
I—Coör.	4	6.25	2.17	.73	25	175	43.75
II—Coör.	4	8.75	2.17	.73	35	325	81.25
Total	8	7.50	2.50	.60	60	500	62.50
Western							
I—Coör.	3	3.33	2.36	.92	10	50	16.67
II—Coör.	1	-----	-----	----	5	25	-----
Total	4	3.75	2.17	.44	15	75	18.75
All Coör.	66	7.35	3.16	.26	485	4.225	64.02

FUNCTION No. 6

Purchase and Sale of Buildings and Grounds, Approving Architect's Plans, Maintenance of Buildings

Eastern							
I—Coör.*	13	7.00	4.19	.78	91	865	66.54
II—Coör.†	13	4.08	3.89	.73	53	413	31.77
Total	26	5.54	4.30	.57	144	1,278	49.15
Southern							
I—Coör.	7	4.14	3.32	.85	29	197	28.14
II—Coör.	6	9.50	1.12	.31	57	549	91.50
Total	13	6.62	3.68	.69	86	746	57,38
Great Lakes							
I—Coör.	9	3.56	3.86	.87	32	248	27.56
II—Coör.	6	4.67	3.14	.86	28	190	31.67
Total	15	4.00	3.63	.63	60	438	29.20
Great Plains							
I—Coör.	4	7.00	2.12	.71	28	214	53.50
II—Coör.	4	7.00	2.00	.67	28	212	53.00
Total	8	7.00	2.06	.49	56	426	53.25
Western							
I—Coör.	3	2.33	3.30	1.30	7	48	16.33
II—Coör.	1	-----	-----	----	7	49	-----
Total	4	3.50	3.50	.71	14	98	24.50
All Coör.	66	5.45	3.94	.33	360	2,986	45.24

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XII *(Continued)*

FUNCTION No. 7

Determination of Curricula

Group	Number of Cities	Mean	S.D.	P.E.$_m$	Sum of Means	Sum of Mean^2	Average of Mean^2
Eastern							
I—Coör.*	13	8.46	3.61	.68	110	1,100	84.62
II—Coör.†	13	10.00	.....	....	130	1,300	100.00
Total	26	9.23	2.67	.35	240	2,400	92.31
Southern							
I—Coör.	7	10.00	.....	....	70	700	100.00
II—Coör.	6	10.00	.....	....	60	600	100.00
Total	13	10.00	.....	....	130	1,300	100.00
Great Lakes							
I—Coör.	9	10.00	.....	....	90	900	100.00
II—Coör.	6	10.00	.....	....	60	600	100.00
Total	15	10.00	.....	....	150	1,500	100.00
Great Plains							
I—Coör.	4	10.00	.....	....	40	400	100.00
II—Coör.	4	10.00	.....	....	40	400	100.00
Total	8	10.00	.....	....	80	800	100.00
Western							
I—Coör.	3	10.00	.....	....	30	300	100.00
II—Coör.	1	.....	.....	....	10	100	.....
Total	4	10.00	.....	....	40	400	100.00
All Coör.	66	9.70	1.70	.14	640	6,400	96.97

FUNCTION No. 8

Selection of Textbooks and Supplies

Eastern							
I—Coör.*	13	10.00	.....	....	130	1,300	100.00
II—Coör.†	13	9.62	1.30	.24	125	1,225	94.23
Total	26	9.81	.93	.12	255	2,525	97.12
Southern							
I—Coör.	7	7.14	3.65	.93	50	450	64.29
II—Coör.	6	8.17	2.87	.79	50	450	75.00
Total	13	7.69	3.18	.59	100	900	69.23
Great Lakes							
I—Coör.	9	8.33	2.37	.53	75	675	75.00
II—Coör.	6	9.17	1.85	.51	55	525	87.50
Total	15	8.67	2.20	.38	130	1,200	80.00
Great Plains							
I—Coör.	4	10.00	.....	....	40	400	100.00
II—Coör.	4	10.00	.....	....	40	400	100.00
Total	8	10.00	.....	....	80	800	100.00
Western							
I—Coör.	3	6.33	3.15	1.23	20	150	50.00
II—Coör.	1	.....	.....	....	10	100	.....
Total	4	7.50	2.50	.51	30	250	62.50
All Coör.	66	9.02	2.15	.18	595	5,675	85.98

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XII *(Continued)*

FUNCTION No. 9

Determining New Policies

Group	Number of Cities	Mean	S.D.	P.E.$_m$	Sum of Means	Sum of Mean^2	Average of Mean^2
Eastern							
I—Coör.*	13	9.23	2.67	.50	120	1,200	92.31
II—Coör.†	13	9.23	2.67	.50	120	1,200	92.31
Total	26	9.23	2.67	.35	240	2,400	92.31
Southern							
I—Coör.	7	8.57	3.50	.89	60	600	85.72
II—Coör.	6	10.00			60	600	100.00
Total	13	9.23	2.67	.50	120	1,200	92.31
Great Lakes							
I—Coör.	9	10.00			90	900	100.00
II—Coör.	6	8.33	3.73	1.03	50	500	83.34
Total	15	9.33	2.51	.44	140	1,400	93.33
Great Plains							
I—Coör.	4	10.00			40	400	100.00
II—Coör.	4	10.00			40	400	100.00
Total	8	10.00			80	800	100.00
Western							
I—Coör.	3	10.00			30	300	100.00
II—Coör.	1				10	100	
Total	4	10.00			40	400	100.00
All Coör.	66	9.39	2.40	.20	620	6,200	93.94

FUNCTION No. 10

Direction and Supervision of Classroom Instruction, Continuation Schools, and Evening Schools

Eastern							
I—Coör.*	13	10.00			130	1,300	100.00
II—Coör.†	13	10.00			130	1,300	100.00
Total	26	10.00			260	2,600	100.00
Southern							
I—Coör.	7	8.71	2.20	.56	61	565	80.71
II—Coör.	6	10.00			60	600	100.00
Total	13	9.31	1.71	.32	121	1,165	89.62
Great Lakes							
I—Coör.	9	9.00	2.00	.45	81	765	85.00
II—Coör.	6	10.00			60	600	100.00
Total	15	9.40	1.62	.28	141	1,365	91.00
Great Plains							
I—Coör.	4	10.00			40	400	100.00
II—Coör.	4	10.00			40	400	100.00
Total	8	10.00			80	800	100.00
Western							
I—Coör.	3	7.00	2.45	.95	21	165	55.00
II—Coör.	1				10	100	
Total	4	7.75	2.49	.51	31	265	66.25
All Coör.	66	9.59	1.37	.11	633	6,195	93.86

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XIII

Computation of the Critical Ratio

Comparison of Centralized and Coördinated Schools, Class I, 30,000 to 70,000, and Class II, 70,000 to 250,000, in each geographical section and for functions of administration Nos. 1 to 5. Critical ratios starred are Coördinated Schools.

	1		2		3		4		5	
Group	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.
Eastern										
I	.31	2.13	------	------	.52	2.37	.51	.37	.60	2.30
II	.29	4.45	------	------	.58	1.47	.69	1.80	.53	3.68
Total	.22	4.27	------	------	.38	2.74	.40	1.63	.40	4.08
Southern										
I	.41	.93	1.32	3.90	.89	2.93	.77	1.00	.76	1.36
II	.39	1.03	1.45	1.61	----	------	.85	1.56	.90	.92
Total	.30	1.03	.99	3.95	.65	2.49	.55	1.55	.55	1.55
Great Lakes										
I	.36	2.83	1.10	2.23	.62	2.82	.60	3.17	.89	4.05
II	.40	6.25	------	------	----	------	1.00	1.25	----	------
Total	.28	5.46	.92	4.22	.51	3.43	.49	3.57	.70	4.39
Great Plains										
I	.47	6.40	------	------	----	------	----	------	----	------
II	.59	1.70	------	------	----	------	----	------	.89	.47
Total	.51	3.92	------	------	----	------	----	------	.66	3.15
Western										
I	----	------	------	------	----	------	1.23	2.48	1.00	6.05
II	----	------	------	------	----	------	------	------	----	------
Total	.61	3.66	------	------	----	------	.59	4.81	.59	9.05
Grand Total	.15	7.87	.42	8.52	.25	7.20	.25	5.40	.28	7.43

TABLE XIII *(Continued)*

Computation of the Critical Ratio

Comparison of Centralized and Coördinated Schools, Class I, 30,000 to 70,000, and Class II, 70,000 to 250,000, in each geographical section and for functions of administration Nos. 6 6to 10. Critical ratios starred are Coördinated Schools.

Group	6		7		8		9		10	
	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.	$P.E._d$	C.R.
Eastern										
I	.91	.38*	.74	.10	----	----	----	----	----	----
II	1.10	1.68	----	----	----	----	----	----	----	----
Total	.70	1.30	.41	.44	.15	.60	----	----	----	----
Southern										
I	.94	4.94	----	----	1.08	.07	----	----	.62	1.00
II	.71	1.97*	----	----	.85	1.56	----	----	----	----
Total	.77	2.49	----	----	.71	.49	----	----	.26	.72
Great Lakes										
I	.93	4.65	----	----	.55	2.51	----	----	.53	.60*
II	----	----	----	----	----	----	----	----	----	----
Total	.70	5.87	----	----	.40	2.68	.55	.69*	.38	1.53*
Great Plains										
I	----	----	----	----	----	----	----	----	----	----
II	.74	3.38	----	----	----	----	----	----	----	----
Total	.52	5.28	----	----	----	----	----	----	----	----
Western										
I	1.39	4.71	----	----	----	----	----	----	----	----
II	----	----	----	----	----	----	----	----	----	----
Total	.85	6.05	----	----	----	----	----	----	----	----
Grand Total	.39	5.95	.21	2.10*	.21	1.95	.22	1.45	.15	.40*

*Coördinated schools.

Conclusions and Recommendations

This study was undertaken with the definite purpose of dealing with two types of public school administration —the Centralized and the Coördinated. Other studies have been made in the field of types of public school districts and for purposes of comparison with two of these studies, Frasier and McGaughey, the questionnaire of this study asked for information regarding Independent, Dependent and Partially Dependent types of school districts.

The studies of Frasier and McGaughey included a wider range of cities than was attempted in this study. Their studies included the 946 cities of 8,000 or more population, Frasier having 169 cities and McGaughey 377 cities. This study deals with cities from 30,000 to 250,000 only. There were 223 cities of this range of population in the United States i n1920. Of these cities, Frasier has 55 in his study and McGaughey has 115. This study includes 206 of these city districts.

The specific problem of this study concerns itself with the organization of public school administration as it relates to the office of superintendent of schools. The Centralized school is one having all authority centering in the office of the superintendent and the Coördinated school has a business manager who is responsible, for fiscal matters, to the board of education directly and not to the superintendent.

In order to determine the differences of efficiency, if any, in these two types of administration use was made of two measures, quite different in kind. First, an index number was made up of data that are the corollaries of educational efficiency, and these factors were applied to the 140 Centralized and 66 Coördinated schools. Second, another measure made up of the functions of public school administration was applied to the two groups of schools in the same manner as that of the index number.

The Index Number.—The application of the index number to the 140 Centralized and 66 Coördinated schools reveals but one outstanding, significant fact. The fifth

factor, the amount spent per pupil in average daily attendance on the basis of current expenses, is definitely in favor of the Coördinated schools.

The critical ratio for each factor is given in some detail.

1. The first factor, the teacher-pupil ratio in the elementary grades, shows a critical ratio of 1.12 in favor of the Coördinated schools. This ratio is not significant since there is about one chance in three that the difference may be zero or even negative.[1]

2. The critical ratio of the second factor of the index number is 2.23 in favor of the Coördinated group. This factor is the teacher-pupil ratio in the secondary schools. While 3 is taken as the standard of significant difference, 2.5 would show that the chances are only one to twenty-one that the difference may be zero or negative; therefore, this ratio of 2.23 has some significance.

3. The third factor, percentage that secondary teachers are of the total teachers in day schools, gives a critical ratio of 2.38 in favor of the Centralized schools and is slightly more significant than factor No. 2 for the Coördinated group.

4. The critical ratio of the fourth factor, the percentage that average daily attendance in secondary schools is of average daily attendance of day schools, is 2.20 for the Centralized group, but again the difference is not very significant.

5. The fifth factor, the amount spent per pupil in average daily attendance on the basis of current expenses, is the one, highly significant ratio. This is 5.90 and is in favor of the Coördinated schools. One may get the value of this ratio by relating it to a ratio of 4.5 which, according to McGaughey, shows that there are 9,988 chances out of 10,000 that the difference is a true one.[2]

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[1]J. R. McGaughey: *The Fiscal Administration of City School Systems*, p. 71.

[2]J. R. McGaughey: *The Fiscal Administration of City School Systems*, p. 74.

6. Factor No. 6 is the percentage that salaries of teachers are of current expenses. The critical ratio is only 1.04 but is in favor of the Centralized schools.

7. The critical ratio of the seventh factor is 2.00 in favor of the Centralized schools. This relates to the percentage that supervisors and principals salaries and expenses are of current expenses.

8. The result of the eighth factor, the percentage that general control is of current expenses, shows a critical ratio of zero.

The first four of these factors are educational and the last four are financial. With the exception of the first financial factor, No. 5 in the list, the critical ratios do not show that these corollaries of educational efficiency are better administered in one type than in the other.

The Functions of School Administration.—The second measure of the study, the functions of school administration, shows a different situation. This measure was applied to the two groups of schools on the assumption that the superintendent of schools should initiate or execute these functions.

1. Factor No. 1 is the appointment of assistant superintendents, principals, teachers, janitors, and clerks. The critical ratio is 7.87 in favor of the Centralized schools.

2. The critical ratio of factor No. 2 is 8.52 and for the Centralized group. This function is the preparation of the budget and the critical ratio is the largest of the list.

3. The third factor is that of the transfer of principals and teachers and other employees. The critical ratio is 7.20 in favor of the Centralized schools.

4. The critical ratio of the fourth factor is 5.40 and in favor of the Centralized group. This refers to the dismissal of principals and teachers and other employees.

5. The fifth factor is that of attendance, taking the census and enforcing compulsory attendance laws. The critical ratio is 7.43 for the Centralized schools.

6. Factor No. 6 is that pertaining to buildings and grounds; purchase and sale; approving architect's plans;

maintenance of buildings. Again the ratio is in favor of the Centralized group and is 5.95.

7. The seventh function is determination of curricula. The critical ratio, 2.10, is in favor of the Coördinated schools.

8. Number 8 has to do with the selection of textbooks and supplies. The critical ratio of 1.95 is for the Centralized group.

9. Factor nine is determining new policies and the critical ratio of 1.45 is for the Centralized schools.

10. The critical ratio for the tenth factor, direction and supervision of classroom instruction, continuation schools and evening schools, is 0.40 on the side of Coördinated schools.

No further comment is needed on the first six of the above functions. On the basis of this measure, one is justified in recommending to boards of education of the cities included in this study that more authority to initiate and to execute the following functions should be given to the superintendent of schools. Appointment of assistant superintendents, principals, teachers, janitors, and clerks; the preparation of the budget; the transfer of principals and teachers and other employees; the dismissal of principals and teachers and other employees; taking the census and enforcing compulsory attendance; purchase and sale of buildings and grounds, approving architect's plans, and the maintenance of buildings.

The following functions of administration which are largely educational in nature and which have long been exercised by superintendents in both types of schools show no significant differences in the application of the functions of school administration to the two groups of schools under consideration. They are being administered, for the most part, by the superintendent of schools and should continue to be so administered. These are: determination of the curricula; selection of textbooks and supplies; determining new policies; direction and supervision of classroom instruction, continuation schools, and evening schools.

The following tables show the results of the computation of the critical ratio of the index number and the functions of school administration:

TABLE XIV

Type of Administration	Index Number							
	1	2	3	4	5	6	7	8
Centralized	------	------	2.38	2.20	------	1.04	2.00	------
Coördinated	1.12	2.23	------	------	5.90	------	------	0

TABLE XV

Type of Administration	Functions of Administration									
	1	2	3	4	5	6	7	8	9	10
Centralized	7.87	8.52	7.20	5.40	7.43	5.95	------	1.95	1.45	------
Coördinated	------	------	------	------	------	------	2.10	------	------	.40

BIBLIOGRAPHY

Ayres, L. P. *An Index Number for State School Systems.* Department of Education. Russell Sage Foundation, New York City, 1920.

Bureau of Education Bulletin, 1919, No. 90; 1923, No. 29; 1924, No. 34.

Cubberley, E. P. *Public School Administration.* Houghton Mifflin Company, Boston, 1922.

Frasier, G. W. *The Control of City School Finances.* The Bruce Publishing Company, Milwaukee, 1922.

McGaughey, J. R. *The Fiscal Administration of City School Systems.* A report reviewed and presented by the Educational Finance Inquiry Commission under the auspices of the American Council on Education, Washington, 1924.

Proceedings of the Fourteenth Annual Meeting of the National Association of Public School Business Officials, Kansas City, Mo., 1925.

Proceedings of the National Education Association, 1884, 1894, 1895, 1899, 1900, 1917, 1925.

Report of the Commissioner of Education, 1870, 1880.

The Status of the Superintendent. First Year Book of the Department of Superintendence of the National Education Association, 1923.

Educational Review, Vol. 20, p. 62.

The American School Board Journal, Vol. IV, February, 1892; Vol. V, January, 1893.

APPENDIX

The Index Number

1. Teacher-pupil ratio in the elementary grades on basis of average daily attendance.
2. Teacher-pupil ratio in the secondary grades on basis of average daily attendance.
3. Percentage that secondary teachers are of total teachers in elementary and secondary schools.
4. Percentage that average daily attendance in secondary schools is of total average daily attendance in elementary and secondary schools.
5. Averge spent per pupil in average daily attendance in elementary and secondary schools on basis of current expenses.
6. Percentage salaries of teachers in day schools are of current expenses.
7. Percentage salaries and expenses of supervisors and principals of day schools are of current expenses.
8. Percentage general control is of current expenses.

Size of Cities

Class I—30,000 to 70,000 population.
Class II—70,000 to 250,000 population.

TABLE XVI

DATA OF THE INDEX NUMBER: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Geographical Grouping of Cities by States	Number of Cities		Index Number							
	Cent.	Coör.	1	2	3	4	5	6	7	8
EASTERN										
I—Centralized	37	----	------	------	------	------	----------	------	------	----
Connecticut										
Meriden	----	----	33.0	23.9	25.2	19.6	105.15	61.1	11.0	2.1
New Britain	----	----	31.8	20.3	19.4	13.4	109.22	62.2	4.9	2.5
Stamford	----	----	25.4	17.3	18.7	13.5	75.10	68.4	6.5	2.1
Maine										
Lewiston	----	----	27.3	24.2	22.7	20.6	83.88	60.1	4.6	3.1
Portland	----	----	28.6	20.6	31.4	24.7	80.19	62.6	4.7	3.1
Massachusetts										
Brockton	----	----	29.9	24.4	20.9	17.7	81.92	63.8	4.5	1.5
Brookline	----	----	25.0	21.4	27.6	24.7	140.72	59.9	6.9	3.9
Chelsea	----	----	35.6	23.1	19.1	13.3	81.07	67.5	5.0	2.0
Chicopee	----	----	33.8	17.3	16.4	9.2	89.44	58.5	7.8	3.5
Everett	----	----	34.3	23.3	18.0	13.0	70.02	64.1	8.3	2.3
Fitchburg	----	----	25.2	25.0	23.4	23.2	96.26	58.1	9.1	3.5
Haverhill	----	----	30.5	24.5	25.6	21.7	87.67	61.2	7.1	2.1
Holyoke	----	----	28.4	17.8	22.7	15.6	166.21	60.1	6.8	3.1
Malden	----	----	38.5	21.6	23.9	15.0	70.24	62.6	9.5	2.3
Medford	----	----	31.0	19.9	30.6	22.0	94.85	68.1	5.4	2.8
Newton	----	----	26.2	21.0	27.2	23.1	120.03	67.1	7.2	3.0
Pittsfield	----	----	24.1	25.1	17.4	18.0	92.83	63.1	10.0	2.3
Taunton	----	----	27.9	21.3	19.7	15.8	73.51	66.9	5.8	2.1
Waltham	----	----	30.2	15.9	22.4	13.2	112.82	67.9	4.0	3.3
New Jersey										
Atlantic City	----	----	25.6	22.2	21.7	19.4	97.23	74.4	9.5	4.9
New Brunswick	----	----	16.7	15.0	17.8	13.2	139.41	64.6	6.2	3.2
New York										
Amsterdam	----	----	30.3	18.0	15.2	9.6	57.05	53.8	11.0	4.6
Auburn	----	----	20.6	18.4	26.8	24.6	101.61	63.0	9.7	3.1
Binghamton	----	----	23.4	16.7	16.9	12.7	96.77	73.2	9.0	2.3
Elmira	----	----	23.1	24.4	24.8	25.8	99.28	71.0	8.4	2.7
Mount Vernon	----	----	31.9	21.4	24.4	17.8	133.66	64.8	6.8	2.4
Newburgh	----	----	29.5	31.5	15.3	16.2	75.45	62.0	7.4	2.7
New Rochelle	----	----	28.7	19.7	21.8	16.1	125.06	64.3	7.9	2.6
Niagara Falls	----	----	30.1	19.5	20.3	14.1	108.44	65.1	7.4	1.9
Poughkeepsie	----	----	28.1	25.5	24.4	22.7	80.80	58.9	10.6	3.7
Pennsylvania										
Altoona	----	----	31.8	32.5	21.8	22.2	70.86	57.3	5.4	3.6
Chester	----	----	24.7	20.9	19.9	17.4	85.86	64.6	4.4	4.7
Hazelton	----	----	38.9	23.2	14.0	8.8	71.66	63.3	5.6	5.5
Lancaster	----	----	34.0	26.5	21.5	17.6	48.47	61.9	3.6	4.9
Norristown	----	----	26.9	32.8	13.8	16.4	58.91	71.0	9.1	4.5
York	----	----	34.4	24.8	21.6	16.6	61.23	68.0	3.3	5.3
Rhode Island										
Woonsocket	----	----	32.8	25.6	12.6	10.1	76.12	68.2	2.3	3.4
—Coördinated	----	13	------	------	------	------	--------	------	----	----
New Jersey										
East Orange	----	----	26.0	21.3	25.6	22.0	113.57	70.9	7.4	3.3
Hoboken	----	----	26.7	19.6	11.3	8.5	120.81	64.9	5.9	2.6

TABLE XVI *(Continued)*

DATA OF THE INDEX NUMBER: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Geographical Grouping of Cities by States	Number of Cities Cent.	Coör.	Index Number 1	2	3	4	5	6	7	8
EASTERN										
I—Coördinated										
New Jersey *(Cont'd)*										
Passaic	....	....	29.5	20.6	15.6	11.4	89.72	63.8	8.1	2.7
Perth Amboy	....	....	33.6	22.8	15.0	10.7	70.48	68.9	4.5	2.2
West Hoboken	....	....	32.0	20.0	17.1	11.5	82.13	67.2	8.2	2.6
New York										
Jamestown	....	....	29.2	23.2	24.3	20.3	94.23	59.6	7.4	3.5
Watertown	....	....	32.3	25.2	20.0	16.3	64.77	67.4	6.8	2.4
Pennsylvania										
Bethlehem	....	....	32.0	33.0	18.1	18.6	76.46	54.5	3.5	4.4
Easton	....	....	34.9	22.4	20.9	14.5	93.26	58.2	4.6	7.5
Johnstown	....	....	27.9	33.6	16.9	19.6	101.56	66.5	4.3	4.0
McKeesport	....	....	36.7	25.4	23.1	17.2	70.01	59.9	7.5	5.3
Williamsport	....	....	33.0	26.0	25.3	21.1	74.65	60.6	2.3	4.6
Rhode Island										
Pawtucket	....	....	25.2	19.8	16.6	12.3	95.84	60.5	5.4	2.8
II—Centralized	14	....	.....	.....	.....	.....	.....	.....	.....	....
Connecticut										
Bridgeport	....	....	36.2	18.3	18.7	10.4	82.33	67.5	8.8	3.3
Massachusetts										
Cambridge	....	....	34.4	22.2	28.2	20.2	90.49	66.2	8.5	2.9
Fall River	....	....	26.7	20.7	13.9	11.1	89.56	64.0	4.2	2.7
New Bedford	....	....	34.0	25.3	10.2	7.8	85.33	62.2	8.7	2.9
Sommerville	....	....	38.6	25.3	25.7	18.5	94.35	71.7	7.7	1.6
New Jersey										
Bayonne	....	....	25.4	25.3	11.1	11.1	113.46	64.8	6.7	6.2
Trenton	....	....	19.4	19.8	9.8	10.0	141.75	63.2	9.1	3.0
New York										
Albany	....	....	28.3	21.8	19.7	15.9	113.36	63.9	9.6	2.0
Schenectady	....	....	27.4	22.8	19.0	16.3	90.67	64.2	6.6	1.8
Troy, Lans. Dist.	....	....	23.7	26.4	21.2	23.2	85.98	60.6	11.0	3.0
Troy, Union Dist.	....	....	20.9	26.9	13.6	16.8	121.75	62.2	9.9	2.0
Utica	....	....	28.7	23.4	15.1	12.7	98.97	61.4	6.4	1.0
Pennsylvania										
Wilkes-Barre	....	....	34.9	24.7	20.4	15.4	67.52	65.0	2.7	3.1
Rhode Island										
Providence	....	....	32.2	19.1	19.3	12.4	81.99	65.2	4.0	3.0
II—Coördinated	....	13	.....	.....	.....	.....	.....	.....	....	....
Connecticut										
Hartford	....	....	29.9	17.0	18.3	11.3	69.91	62.6	5.5	.6
New Haven	....	....	34.4	16.5	29.5	16.7	75.75	63.6	7.5	2.6
Massachusetts										
Lynn	....	....	34.6	23.7	28.7	21.6	91.54	57.1	3.3	3.9
Springfield	....	....	29.0	14.5	31.5	18.6	162.94	63.0	6.1	2.5
Worcester	....	....	30.4	18.9	20.8	14.1	86.02	67.1	7.2	2.8
New Jersey										
Elizabeth	....	....	32.1	24.7	17.5	14.1	78.74	54.7	12.5	2.5
Paterson	....	....	32.9	24.9	18.1	14.3	86.66	67.5	8.1	2.5
New York										
Syracuse	....	....	41.4	26.1	27.4	19.2	85.08	69.5	6.9	1.4
Yonkers	....	....	26.5	26.0	13.6	13.4	123.52	71.8	8.5	2.3

TABLE XVI *(Continued)*

DATA OF THE INDEX NUMBER: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Geographical Grouping of Cities by States	Number of Cities Cent.	Coör.	Index Number 1	2	3	4	5	6	7	8
EASTERN										
II—Coördinated										
Pennsylvania										
Allentown	....	....	36.7	26.5	19.8	15.1	80.99	58.2	3.4	5.0
Erie	....	....	36.2	16.4	28.7	15.4	121.32	59.2	5.6	5.2
Reading	....	....	36.0	25.0	17.4	12.8	63.41	58.5	4.4	6.0
Scranton	....	....	35.9	31.9	12.4	11.1	73.02	62.3	5.1	3.7
SOUTHERN										
I—Centralized	18	....	.....	.....	.....	.....	.....	.....	....	....
Alabama										
Mobile	....	....	30.9	28.1	20.4	18.9	53.17	73.0	7.5	4.2
Montgomery	....	....	39.8	30.7	21.7	17.6	31.64	74.0	10.7	4.0
Arkansas										
Little Rock	....	....	28.6	20.0	40.1	31.9	68.92	57.0	10.6	3.1
Florida										
Pensacola	....	....	29.8	28.6	16.5	15.9	36.81	63.5	10.9	5.5
Tampa	....	....	38.1	22.0	18.9	11.8	48.95	71.7	6.6	7.4
Georgia										
Augusta	....	....	30.4	21.5	18.1	13.5	59.52	69.4	6.6	3.6
Columbus	....	....	50.3	28.9	19.2	12.0	38.12	69.4	12.7	2.6
Louisiana										
Shreveport	....	....	31.1	15.7	29.9	17.7	64.32	70.1	7.7	5.7
North Carolina										
Wilmington	....	....	35.3	26.3	13.1	10.1	48.47	73.3	6.6	3.9
South Carolina										
Charleston	....	....	37.0	23.1	26.7	18.5	49.43	68.4	9.1	2.8
Tennessee										
Chattanooga	....	....	29.5	16.9	14.4	8.8	29.27	62.4	24.6	3.6
Texas										
Beaumont	....	....	33.9	29.4	27.6	24.8	58.92	67.6	11.7	6.2
Waco	....	....	34.0	26.3	25.6	21.0	54.29	75.6	10.3	2.9
Wichita Falls	....	....	38.1	18.5	34.2	20.2	64.09	63.2	11.0	5.2
Virginia										
Petersburg	....	....	39.4	17.9	26.9	14.3	43.82	69.5	5.9	2.1
Portsmouth	....	....	35.9	29.4	20.0	17.0	43.76	73.8	6.6	3.1
West Virginia										
Charleston	....	....	20.2	19.9	15.8	15.5	81.13	70.0	7.5	2.3
Huntington	....	....	26.4	17.1	17.6	12.1	112.44	72.1	9.2	2.7
—*Coördinated*	....	7	.....	.....	.....	.....	.....	.....	....	....
Kentucky										
Covington	....	....	30.3	24.4	20.0	16.8	65.69	62.6	9.8	3.9
Lexington	....	....	49.7	26.2	20.0	11.7	69.03	67.0	6.8	5.2
North Carolina										
Winston-Salem	....	....	40.1	21.3	14.7	8.4	43.65	73.2	11.9	2.5
Texas										
Galveston	....	....	27.2	18.9	21.9	16.3	68.44	59.3	11.0	2.6
Virginia										
Newport News	....	....	33.9	23.0	24.6	18.1	52.96	64.7	9.5	3.8
Roanoke	....	....	37.9	21.7	14.8	9.0	50.76	75.6	8.1	2.1
West Virginia										
Wheeling	....	....	25.5	20.8	17.7	14.9	92.74	60.0	8.8	2.6

TABLE XVI *(Continued)*

DATA OF THE INDEX NUMBER: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Geographical Grouping of Cities by States	Number of Cities Cent.	Coör.	Index Number 1	2	3	4	5	6	7	8
SOUTHERN										
II—Centralized	10									
Alabama										
Birmingham			40.4	21.8	25.1	15.3	45.84	69.0	9.5	3.0
Delaware										
Wilmington			33.4	22.6	21.6	15.7	80.48	65.6	7.9	2.2
Florida										
Jacksonville			30.5	26.6	8.1	7.1	28.59	71.5	2.8	4.
Georgia										
Atlanta			35.6	24.7	18.5	13.6	54.12	77.0	7.4	1.
Savannah			33.9	22.4	12.0	8.2	52.86	68.5	8.6	3.
Tennessee										
Memphis			25.8	19.7	17.8	14.2	62.56	73.4	6.8	3.
Nashville			43.2	28.1	15.9	11.0	34.94	66.4	7.6	3.
Texas										
El Paso			29.0	20.3	18.6	13.6	66.38	72.9	7.0	3.
San Antonio			39.8	22.3	25.9	16.4	51.40	74.3	8.4	3.
Virginia										
Norfolk			25.8	24.4	15.6	14.8	69.42	68.5	7.4	4.
II—Coördinated		6								
Kentucky										
Louisville			33.5	24.1	21.7	16.6	76.09	69.6	7.4	7.
Tennessee										
Knoxville			32.4	25.1	20.0	16.2	50.78	75.3	7.1	1.
Texas										
Dallas			25.5	30.6	17.8	20.7	68.50	85.0	6.8	3.
Fort Worth			33.9	22.5	27.2	19.9	56.24	77.1	10.3	2.
Houston			32.7	12.2	16.2	6.7	110.21	64.0	14.3	2.
Virginia										
Richmond			32.6	23.8	18.0	13.8	79.93	71.7	2.7	1.
GREAT LAKES										
I—Centralized	34									
Illinois										
Aurora, E. Side			33.4	24.1	32.2	25.5	94.14	57.9	11.7	2.
Aurora, W. Side			23.9	16.1	32.8	24.7	112.77	65.0	10.6	4.
Cicero			40.1	15.4	29.5	13.8	52.49	62.2	5.3	4
Danville			34.5	24.5	21.0	15.9	50.22	68.3	8.0	5
Decatur			32.3	20.4	26.1	18.3	80.06	66.2	7.4	4
Evanston, Dist.75			22.2	15.9	27.9	20.7	120.11	52.5	6.8	4
Evanston, Dist.76			26.2	15.9	27.9	20.7	90.14	63.3	2.3	5
Joliet			28.5	16.0	29.8	19.2	86.12	56.1	9.7	3
Moline			30.3	25.8	28.6	25.4	61.20	78.0	13.7	5
Oak Park			24.9	21.6	34.2	31.1	88.75	63.6	7.7	4
Quincy			25.9	14.7	23.9	15.1	113.70	63.9	8.9	3
Rockford			22.5	19.4	24.8	22.2	98.76	61.0	6.7	3
Rock Island			27.5	21.9	23.6	19.7	80.97	58.9	7.9	3
Springfield			25.8	21.5	20.3	17.5	85.42	66.3	7.8	3
Indiana										
Gary			30.6	26.5	14.1	12.5	116.63	54.8	8.2	5
Hammond			30.7	17.8	20.3	12.9	72.71	52.1	8.1	6

TABLE XVI *(Continued)*

DATA OF THE INDEX NUMBER: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Geographical Grouping of Cities by States	Number of Cities		Index Number							
	Cent.	Coör.	1	2	3	4	5	6	7	8
GREAT LAKES										
I—Centralized										
Indiana *(Cont'd)*										
Kokomo	....	....	29.6	18.4	25.7	17.7	60.44	60.2	12.5	2.8
Terre Haute	....	....	30.8	9.9	24.6	9.5	116.50	69.6	6.1	2.3
Michigan										
Battle Creek	....	....	26.5	28.6	23.5	24.9	112.44	64.8	5.1	3.5
Hamtramck	....	....	29.8	10.8	4.1	1.5	119.86	53.7	4.5	3.9
Highland Park	....	....	19.2	14.9	44.7	38.6	174.19	63.0	3.8	4.8
Jackson	....	....	32.4	24.5	22.9	18.2	126.03	67.2	4.8	4.7
Kalamazoo	....	....	25.6	18.5	23.4	18.0	158.91	62.7	6.4	4.3
Lansing	....	....	36.8	18.5	29.0	17.1	112.05	68.5	4.1	2.8
Muskegon	....	....	27.5	13.3	29.9	17.1	126.14	53.2	6.6	3.7
Saginaw, W. Side	....	....	28.3	20.2	23.0	17.6	99.69	61.9	7.0	5.0
Ohio										
Hamilton	....	....	30.4	29.0	17.3	16.6	68.31	73.2	4.6	2.9
Lorain	....	....	33.0	26.8	19.5	16.5	76.48	64.5	7.1	4.0
Springfield	....	....	31.3	30.4	18.1	17.7	75.26	53.5	9.8	3.7
Wisconsin										
Green Bay	....	....	25.7	20.7	30.1	25.9	93.77	60.9	11.0	2.6
Kenosha	....	....	30.4	21.7	17.0	12.7	155.01	63.5	7.8	4.6
LaCrosse	....	....	32.9	26.4	33.3	28.6	83.55	59.8	9.1	5.1
Oshkosh	....	....	31.0	20.0	36.6	27.2	117.01	56.7	9.3	2.1
Sheboygan	....	....	27.3	22.4	23.2	19.9	103.53	57.5	8.4	1.8
I—Coördinated	....	9	.....	.....	.....	.....	.....	.....	....	....
Illinois										
East St. Louis	....	....	28.1	16.5	16.5	10.4	67.45	64.1	7.5	4.2
Indiana										
East Chicago	....	....	29.5	19.5	14.8	10.3	107.78	62.9	7.1	3.0
Muncie	....	....	12.9	20.7	27.0	37.3	147.05	63.1	10.5	5.9
Michigan										
Pontiac	....	....	28.0	21.1	20.1	16.0	132.29	71.9	5.2	3.2
Saginaw, E. Side	....	....	38.6	19.6	30.2	18.0	85.81	56.0	11.1	3.8
Ohio										
Lakewood	....	....	25.7	19.8	31.5	26.2	139.76	65.4	6.3	3.7
Lima	....	....	33.0	24.1	29.3	23.2	80.78	60.5	2.7	4.0
Wisconsin										
Madison	....	....	26.9	18.2	39.9	31.0	130.12	59.2	5.3	3.9
Racine	....	....	25.6	23.1	21.2	19.5	125.53	59.3	7.7	3.0
II—Centralized	4	....	.....	.....	.....	.....	.....	.....	....	....
Indiana										
Fort Wayne	....	....	33.0	23.9	19.6	15.0	102.84	61.1	7.5	3.1
South Bend	....	....	25.0	25.5	15.0	15.3	107.67	59.8	4.8	3.5
Ohio										
Akron	....	....	33.9	21.7	21.6	15.0	88.23	68.6	4.9	2.6
Dayton	....	....	34.4	27.7	21.8	18.3	90.25	59.4	6.9	2.2
II—Coördinated	....	6	.....	.....	.....	.....	.....	.....	....	....
Illinois										
Peoria	....	....	27.4	20.4	24.7	19.6	98.59	61.8	9.8	4.9

TABLE XVI *(Continued)*

DATA OF THE INDEX NUMBER: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Geographical Grouping of Cities by States	Number of Cities Cent.	Coör.	Index Number 1	2	3	4	5	6	7	8
GREAT LAKES										
II—Coördinated										
Michigan										
Flint	—	—	26.8	30.3	12.7	14.2	83.24	60.5	4.0	3.7
Grand Rapids	—	—	25.7	20.0	24.7	20.3	122.02	66.1	7.8	3.7
Ohio										
Canton	—	—	32.3	22.7	16.4	12.1	80.54	60.7	5.8	2.3
Toledo	—	—	27.4	25.0	15.3	14.2	116.67	66.7	5.5	2.6
Youngstown	—	—	35.5	24.7	15.9	11.6	75.63	71.0	5.6	2.0
GREAT PLAINS										
I—Centralized	6	—	—	—	—	—	—	—	—	—
Iowa										
Cedar Rapids	—	—	30.6	19.4	24.3	16.9	132.50	63.8	7.2	3.9
Waterloo, E. Side	—	—	26.6	21.3	20.0	16.7	92.84	60.1	7.1	2.9
Waterloo, W. Side	—	—	24.5	15.8	26.8	19.1	95.97	43.7	9.7	3.2
Missouri										
Springfield	—	—	37.6	22.4	28.9	19.5	52.95	68.5	4.5	3.2
Nebraska										
Lincoln	—	—	28.6	23.3	23.3	19.8	95.98	63.9	8.4	4.9
Oklahoma										
Muskogee	—	—	34.4	21.6	45.3	34.2	65.97	61.8	9.5	5.6
I—Coördinated	—	4	—	—	—	—	—	—	—	—
Iowa										
Council Bluffs	—	—	34.3	23.9	23.3	17.5	90.38	54.9	8.2	1.5
Davenport	—	—	29.9	20.6	23.3	17.3	150.36	60.7	8.2	3.5
Dubuque	—	—	22.7	20.8	19.7	18.4	118.29	61.9	8.5	8.0
Kansas										
Topeka	—	—	29.9	23.7	21.8	18.1	103.01	61.2	9.3	2.5
II—Centralized	6	—	—	—	—	—	—	—	—	—
Iowa										
Des Moines	—	—	27.8	22.5	27.6	23.6	109.63	63.8	6.7	4.0
Sioux City	—	—	28.9	19.0	23.2	16.6	106.91	63.6	8.7	2.5
Kansas										
Wichita	—	—	30.1	19.7	18.7	13.1	103.90	62.0	8.0	2.0
Nebraska										
Omaha	—	—	30.9	19.1	27.0	18.7	103.52	66.3	6.1	5.2
Oklahoma										
Oklahoma City	—	—	31.1	21.4	22.6	16.7	118.57	70.0	7.7	3.4
Tulsa	—	—	22.5	17.4	19.1	15.4	138.08	61.0	6.7	8.0
II—Coördinated	—	4	—	—	—	—	—	—	—	—
Kansas										
Kansas City	—	—	35.7	24.1	18.2	13.0	65.42	61.0	3.5	4.5
Minnesota										
Duluth	—	—	25.5	17.1	23.4	17.0	141.30	63.6	6.3	4.2
St. Paul	—	—	30.9	19.5	23.9	16.5	88.19	67.6	7.1	2.5
Missouri										
St. Joseph	—	—	29.7	20.7	23.5	17.7	64.32	66.3	5.9	3.4

TABLE XVI *(Continued)*

DATA OF THE INDEX NUMBER: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Geographical Grouping of Cities by States	Number of Cities		Index Number							
	Cent.	Coör.	1	2	3	4	5	6	7	8
WESTERN										
I—Centralized	8	----	------	------	------	------	--------	------	----	----
California										
Berkeley	----	----	26.8	20.2	29.1	23.6	180.43	67.3	6.4	6.2
Fresno	----	----	31.2	11.9	35.0	17.0	153.36	72.7	6.9	1.9
Long Beach	----	----	31.0	21.5	33.4	25.9	113.95	64.6	8.3	2.7
Pasadena	----	----	26.0	17.7	35.8	27.6	161.90	65.2	5.0	3.9
Sacramento	----	----	23.7	16.1	15.5	11.1	108.64	66.1	7.9	2.4
San Jose	----	----	27.0	24.0	28.0	25.7	102.46	66.8	9.3	1.6
Stockton	----	----	28.5	16.6	28.5	18.9	107.72	72.4	1.2	2.4
Utah										
Ogden	----	----	26.7	17.0	20.4	14.0	108.96	68.3	9.2	3.2
I—Coördinated	----	3	------	------	------	------	--------	------	----	----
Colorado										
Colorado Springs	----	----	22.0	24.9	20.3	22.4	107.95	67.3	11.4	4.9
Pueblo, Dist. 1	----	----	26.2	16.4	25.6	17.1	105.47	53.3	8.2	4.5
Montana										
Butte	----	----	25.4	28.5	19.3	21.3	128.21	57.9	7.1	6.9
II—Centralized	3	----	------	------	------	------	--------	------	----	----
California										
Oakland	----	----	29.5	18.4	27.2	18.9	123.17	73.7	6.7	2.8
San Diego	----	----	26.8	22.7	27.7	24.5	115.13	63.8	8.5	3.2
Utah										
Salt Lake City	----	----	45.1	19.2	23.8	11.7	104.61	65.5	7.6	3.9
II—Coördinated	----	1	------	------	------	------	--------	------	----	----
Washington										
Spokane	----	----	28.9	22.3	26.7	21.9	91.94	68.5	6.8	2.6

TABLE XVII

Data from Which the Index Number Was Derived: Mean of These Data

Group	Number of Cities	Index Number 1	2	3	4
Eastern					
I—Cent.	37	168.3	4,838.6	46.4	**1,025.9**
I—Coör.	13	195.9	5,876.8	44.9	**1,076.1**
II—Cent.	14	384.6	11,412.6	80.1	**1,754.0**
II—Coör.	13	440.4	14,553.2	122.5	**2,562.3**
Total Cent.	51	227.8	6,643.2	55.6	**1,225.8**
Total Coör.	26	318.2	10,215.0	83.7	**1,819.2**
Southern					
I—Cent.	18	166.2	5,421.1	49.4	**1,124.9**
I—Coör.	7	149.3	5,076.1	34.3	**753.3**
II—Cent.	10	467.5	15,738.5	109.5	**2,491.3**
II—Coör.	6	533.3	16,716.3	132.2	**3,091.2**
Total Cent.	28	273.8	9,105.9	70.9	**1,612.9**
Total Coör.	13	326.5	10,448.5	79.5	**1,832.3**
Great Lakes					
I—Cent.	34	146.9	4,229.7	52.4	**1,025.2**
I—Coör.	9	161.6	4,359.7	55.6	**1,117.0**
II—Cent.	4	436.3	14,008.8	109.8	**2,670.3**
II—Coör.	6	481.8	13,871.7	105.0	**2,449.0**
Total Cent.	38	177.3	5,259.1	58.4	**1,198.4**
Total Coör.	15	289.7	8,164.5	75.3	**1,649.8**
Great Plains					
I—Cent.	6	144.0	4,435.8	57.5	**1,224.0**
I—Coör.	4	142.0	4,202.8	40.5	**908.5**
II—Cent.	6	439.8	12,616.0	140.2	**1,811.7**
II—Coör.	4	432.5	13,187.8	127.0	**2,521.0**
Total Cent.	12	291.9	8,525.9	98.8	**2,017.8**
Total Coör.	8	287.3	8,695.3	83.8	**1,714.8**
Western					
I—Cent.	8	209.1	5,750.6	84.1	**1,525.3**
I—Coör.	3	162.0	3,962.0	43.0	**1,042.7**
II—Cent.	3	486.3	15,970.3	175.3	**3,431.3**
II—Coör.	1	470.0	13,577.0	171.0	**3,805.0**
Total Cent.	11	284.4	8,537.8	109.0	**2,045.1**
Total Coör.	4	239.0	6,365.8	75.0	**1,733.3**
All Cent.	140	233.2	7,070.3	67.3	**1,428.0**
All Coör.	66	304.8	9,377.5	80.5	**1,765.4**

TABLE XVII *(Continued)*

DATA FROM WHICH THE INDEX NUMBER WAS DERIVED: MEAN OF THESE DATA

Group	Number of Cities	Index Number 5	6	7	8
Eastern					
I—Cent.	37	534,585	344,461	37,207	16,086
I—Coör.	13	623,214	396,053	36,932	22,209
II—Cent.	14	1,228,915	795,485	84,939	34,763
II—Coör.	13	762,014	956,909	97,179	43,862
Total Cent.	51	725,186	468,398	50,310	21,213
Total Coör.	26	692,614	676,481	67,056	33,035
Southern					
I—Cent.	18	361,347	250,185	33,836	13,282
I—Coör.	7	359,123	236,917	32,611	11,212
II—Cent.	10	985,537	704,391	94,091	29,645
II—Coör.	6	1,498,622	898,586	85,898	44,961
Total Cent.	28	584,272	412,402	55,355	19,126
Total Coör.	13	885,046	542,303	57,205	26,788
Great Lakes					
I—Cent.	34	492,753	302,462	35,559	19,080
I—Coör.	9	600,124	375,598	42,044	22,705
II—Cent.	4	1,568,984	991,687	92,029	43,236
II—Coör.	6	1,621,230	1,059,497	101,038	49,537
Total Cent.	38	606,041	375,012	41,503	21,623
Total Coör.	15	1,008,566	649,158	65,642	33,438
Great Plains					
I—Cent.	6	489,441	291,346	36,374	20,492
I—Coör.	4	583,352	348,723	49,879	19,727
II—Cent.	6	1,714,772	1,110,906	119,946	82,092
II—Coör.	4	1,392,115	908,438	87,855	50,640
Total Cent.	12	1,102,106	701,126	78,160	51,292
Total Coör.	8	987,859	628,580	68,867	35,183
Western					
I—Cent.	8	943,126	639,462	62,870	30,064
I—Coör.	3	583,111	350,904	50,828	33,905
II—Cent.	3	2,250,896	1,563,641	163,601	72,621
II—Coör.	1	1,598,048	1,094,604	108,649	42,086
Total Cent.	11	1,299,791	891,511	90,342	41,670
Total Coör.	4	836,846	536,829	65,283	35,980
All Cent.	140	742,118	485,044	54,461	25,093
All Coör.	66	846,853	629,572	64,906	32,333

TABLE XVIII

DATA FROM WHICH THE INDEX NUMBER WAS DERIVED: MEDIAN OF THESE DATA

Group	Number of Cities	Index Number 1	2	3	4
Eastern					
I—Cent.	37	161	4,960	46	1,013
I—Coör.	13	183	5,911	45	1,094
II—Cent.	14	388	10,469.5	71.5	1,681.5
II—Coör.	13	426	13,311	102	2,396
Total Cent.	51	181	5,267	50	1,080
Total Coör.	26	252.5	8,334	62	1,592.5
Southern					
I—Cent.	18	162.5	5,612.5	47	928
I—Coör.	7	150	4,272	35	758
II—Cent.	10	403.5	14,492.5	88.5	2,116
II—Coör.	6	557.5	17,615	131.5	3,018
Total Cent.	28	208.5	6,450	49	1,273.5
Total Coör.	13	202	7,668	42	945
Great Lakes					
I—Cent.	34	137.5	3,857.5	45.5	978.5
I—Coör.	9	134	4,059	54	1,229
II—Cent.	4	406	12,305.5	96	2,566
II—Coör.	6	442.5	12,432	86.5	2,014
Total Cent.	38	144.5	3,942.5	47	1,067
Total Coör.	15	201	5,140	63	1,431
Great Plains					
I—Cent.	6	127	4,106.5	56	1,187.5
I—Coör.	4	141.5	4,523.5	43	952.5
II—Cent.	6	360.5	9,782	94	1,826
II—Coör.	4	348	10,586.5	101	1,893
Total Cent.	12	277	7,955	84	1,623.5
Total Coör.	8	237.5	7,074	62	1,485
Western					
I—Cent.	8	199.5	5,655.5	77.5	1,413.5
I—Coör.	3	188	4,143	48	1,193
II—Cent.	3	365	16,446	119	2,186
II—Coör.	1	470	13,577	171	3,805
Total Cent.	11	219	6,272	108	1,802
Total Coör.	4	198	4,712	49	1,310
All Cent.	140	183.5	5,570.5	52.5	1,123.5
All Coör.	66	249	7,634	58	1,429

TABLE XVIII *(Continued)*

DATA FROM WHICH THE INDEX NUMBER WAS DERIVED: MEDIAN OF THESE DATA

Group	Number of Cities	Index Number 5	6	7	8
Eastern					
I—Cent.	37	492,686	320,678	37,173	13,651
I—Coör.	13	567,680	327,035	37,125	22,884
II—Cent.	14	1,261,015	796,536	85,097	30,649
II—Coör.	13	1,603,832	1,003,281	87,730	43,407
Total Cent.	51	573,588	360,154	43,131	14,535
Total Coör.	26	913,091	556,122	50,273	28,873
Southern					
I—Cent.	18	310,383	211,523	32,979	12,133
I—Coör.	7	326,050	218,406	32,700	10,579
II—Cent.	10	1,017,039	682,456	77,729	28,017
II—Coör.	6	1,576,079	926,955	87,863	26,618
Total Cent.	28	423,837	294,815	37,967	15,613
Total Coör.	13	542,632	325,518	42,573	12,403
Great Lakes					
I—Cent.	34	414,471	250,672	32,531	17,988
I—Coör.	9	552,977	370,230	43,484	23,965
II—Cent.	4	1,432,546	852,916	97,080	38,909
II—Coör.	6	1,901,000	822,038	82,504	44,098
Total Cent.	38	466,315	272,384	35,101	19,317
Total Coör.	15	801,764	475,295	52,889	26,807
Great Plains					
I—Cent.	6	408,062	266,127	31,877	18,021
I—Coör.	4	590,438	345,443	52,200	21,643
II—Cent.	6	1,445,707	946,152	103,864	74,227
II—Coör.	4	1,236,979	775,462	75,074	55,386
Total Cent.	12	986,631	629,308	84,195	29,669
Total Coör.	8	745,219	471,770	52,200	27,151
Western					
I—Cent.	8	995,636	649,580	66,603	20,986
I—Coör.	3	576,030	387,539	61,097	28,306
II—Cent.	3	1,286,811	1,277,248	147,824	76,463
II—Coör.	1	1,598,048	1,094,604	108,649	42,086
Total Cent.	11	1,157,129	782,334	73,994	30,986
Total Coör.	4	718,045	442,803	63,431	35,196
All Cent.	140	550,766	353,245	41,191	19,317
All Coör.	66	802,791	481,674	50,004	26,130

TABLE XIX

DATA OF THE INDEX NUMBER: THE MEAN OF THE CENTRALIZED AND COÖRDINATED GROUPS

Group	Number of Cities	Index Number 1	2	3	4	5	6	7	8
Eastern									
I—Cent.*	37	29.1	22.3	21.3	17.3	92.41	64.1	6.9	3.1
I—Coör.	13	30.7	24.1	19.2	15.7	88.27	63.3	5.8	3.7
II—Cent.†	14	29.3	23.0	17.6	14.4	96.97	64.4	7.4	2.8
II—Coör.	13	33.5	22.5	21.8	15.2	92.22	62.7	6.5	3.2
Total Cent.	51	29.2	22.5	20.3	16.5	93.66	64.2	7.1	3.1
Total Coör.	26	32.1	23.3	20.5	15.5	90.25	63.0	6.1	3.4
Southern									
I—Cent.	18	33.8	23.4	22.6	16.8	54.84	69.1	9.8	3.9
I—Coör.	7	34.9	22.3	19.1	13.6	63.32	66.1	9.4	3.2
II—Cent.	10	33.7	23.3	17.9	13.0	54.66	70.7	7.3	3.2
II—Coör.	6	31.8	23.1	20.2	15.7	73.63	73.8	8.1	3.1
Total Cent.	28	33.8	23.3	20.9	15.4	54.77	69.7	8.9	3.7
Total Coör.	13	33.5	22.7	19.6	14.5	68.08	69.6	8.8	3.2
Great Lakes									
I—Cent.	34	29.1	20.4	25.4	19.4	99.51	61.9	7.6	4.0
I—Coör.	9	27.6	20.3	25.6	21.3	113.73	62.5	7.0	3.9
II—Cent.	4	31.6	24.7	19.5	15.9	97.25	62.2	6.0	2.9
II—Coör.	6	29.2	23.9	18.3	15.3	96.12	64.5	6.4	3.2
Total Cent.	38	29.3	20.8	24.8	19.1	99.27	61.9	7.4	3.8
Total Coör.	15	28.2	21.7	22.7	18.9	106.68	63.3	6.8	3.6
Great Plains									
I—Cent.	6	30.4	20.6	28.1	21.0	89.37	60.3	7.7	4.0
I—Coör.	4	29.2	22.3	22.0	17.8	115.51	59.7	8.6	3.8
II—Cent.	6	28.6	19.9	23.0	17.4	113.44	64.5	7.3	4.5
II—Coör.	4	30.5	20.4	22.3	16.1	89.81	64.6	5.7	3.9
Total Cent.	12	29.5	20.2	25.6	19.2	101.40	62.4	7.5	4.2
Total Coör.	8	29.8	21.3	22.1	16.9	102.66	62.2	7.1	3.9
Western									
I—Cent.	8	27.6	18.1	28.2	20.5	129.68	67.9	6.8	3.0
I—Coör.	3	24.5	23.3	21.7	20.3	113.88	59.5	8.9	5.4
II—Cent.	3	33.8	20.1	26.2	18.4	114.30	67.7	7.6	3.3
II—Coör.	1	28.9	22.3	26.7	21.9	91.94	68.5	6.8	2.6
Total Cent.	11	29.3	18.7	27.7	19.9	125.48	67.9	7.0	3.1
Total Coör.	4	25.6	23.0	23.0	20.7	108.39	61.8	8.4	4.7
All Cent.	140	30.2	21.7	22.6	17.5	90.57	64.8	7.6	3.5
All Coör.	66	30.8	22.5	21.2	16.6	92.22	64.2	7.1	3.5

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XX

DATA OF THE INDEX NUMBER: THE MEDIAN OF THE CENTRALIZED AND COÖRDINATED GROUPS

Group	Number of Cities	Index Number 1	2	3	4	5	6	7	8
Eastern									
I—Cent.*	37	29.5	21.6	21.6	16.6	87.67	63.8	6.9	3.0
I—Coör.†	13	32.0	22.8	18.1	16.3	89.72	63.8	5.9	3.3
II—Cent.	14	28.5	23.1	18.9	14.1	90.58	64.1	8.1	2.9
II—Coör.	13	34.4	24.7	19.8	14.3	85.08	62.6	6.1	2.6
Total Cent.	51	28.7	22.2	20.3	16.2	89.56	64.0	7.1	2.9
Total Coör.	26	32.2	23.5	19.1	14.8	85.55	62.8	6.0	2.8
Southern									
I—Cent.	18	34.0	22.6	20.2	16.5	51.30	69.8	9.2	3.6
I—Coör.	7	33.9	21.7	20.0	14.9	65.69	64.7	9.5	2.6
II—Cent.	10	33.7	22.5	18.2	13.9	53.49	70.3	7.5	3.2
II—Coör.	6	32.7	24.0	19.0	16.4	72.30	73.5	7.3	2.4
Total Cent.	28	33.9	22.5	18.9	15.1	53.02	69.8	7.8	3.4
Total Coör.	13	32.7	23.0	20.0	16.2	68.44	69.6	8.8	2.6
Great Lakes									
I—Cent.	34	29.7	20.3	24.7	18.1	91.45	62.5	7.8	4.0
I—Coör.	9	28.0	19.8	27.0	19.5	125.53	62.9	7.1	3.8
II—Cent.	4	33.5	24.7	20.6	15.2	96.05	60.5	5.9	2.9
II—Coör.	6	27.4	23.7	16.2	14.2	90.91	64.0	5.7	3.2
Total Cent.	38	30.1	21.1	23.8	17.9	96.45	62.1	7.5	3.7
Total Coör.	15	27.4	20.7	21.2	18.0	107.78	62.9	6.3	3.7
Great Plains									
I—Cent.	6	29.6	21.5	25.6	19.3	94.41	62.8	7.8	3.6
I—Coör.	4	29.9	22.3	22.6	17.7	110.65	61.0	8.4	2.9
II—Cent.	6	29.5	19.4	22.9	16.7	108.27	63.7	7.2	4.0
II—Coör.	4	30.3	20.1	23.5	16.8	76.81	65.0	6.1	3.9
Total Cent.	12	29.4	20.5	23.8	17.8	103.71	63.7	7.5	3.7
Total Coör.	8	29.9	20.8	23.3	17.4	96.70	61.6	7.7	3.4
Western									
I—Cent.	8	26.9	17.4	28.8	21.3	111.46	67.1	7.4	2.6
I—Coör.	3	25.4	24.9	20.3	21.3	107.95	57.9	8.2	4.9
II—Cent.	3	29.5	19.2	27.2	18.9	115.13	65.5	7.6	3.2
II—Coör.	1	28.9	22.3	26.7	21.9	91.84	68.5	6.8	2.6
Total Cent.	11	27.0	18.4	28.0	18,9	113.95	66.8	7.6	2.8
Total Coör.	4	25.8	23.6	23.0	21.6	106.71	62.6	7.7	4.7
All Cent.	140	30.1	21.6	21.8	16.9	89.85	64.6	7.5	3.2
All Coör.	66	30.4	22.6	21.0	16.6	86.34	63.4	7.1	3.3

The Functions of School Administration.

1. Appointment of assistant superintendents, principals, janitors, and clerks.
2. Preparation of the budget.
3. Transfer of principals and teachers and other employees.

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*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

4. Dismissal of principals and teachers and other employees.

5. Taking the census and enforcing compulsory attendance laws.

6. Purchase and sale of buildings and grounds, approving architect's plans, maintenance of buildings.

7. Determination of curricula.

8. Selection of textbooks and supplies.

9. Determining new policies.

10. Direction and supervision of classroom instruction, continuation schools, and evening schools.

TABLE XXI

THE FUNCTIONS OF SCHOOL ADMINISTRATION: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

	EASTERN								
	Class I*			Class II†			Total		
Per Cent	Cent.	Coör.	Total	Cent.	Coör.	Total	Cent.	Coör.	Total
100	12	3	15	4	1	5	16	4	20
98	4	--	4	1	1	2	5	1	6
97	1	--	1	--	1	1	1	1	2
95	1	--	1	--	--	--	1	--	1
94	--	--	--	2	--	2	2	--	2
93	1	3	4	1	1	2	2	4	6
92	2	--	2	--	1	1	2	1	3
90	5	1	6	3	--	3	8	1	9
89	1	--	1	--	--	--	1	--	1
88	1	1	2	2	2	4	3	3	6
85	2	--	2	--	--	--	2	--	2
83	1	--	1	--	--	--	1	--	1
82	1	--	1	--	--	--	1	--	1
77	1	--	1	--	1	1	1	1	2
76	2	1	3	--	1	1	2	2	4
75	--	--	--	--	1	1	--	1	1
73	--	1	1	--	1	1	--	2	2
72	1	--	1	--	--	--	1	--	1
70	--	1	1	1	--	1	1	1	2
67	--	--	--	--	1	1	--	1	1
63	1	--	1	--	--	--	1	--	1
62	--	1	1	--	--	--	--	1	1
56	--	1	1	--	--	--	--	1	1
51	--	--	--	--	1	1	--	1	1
Total	37	13	50	14	13	27	51	25	77
Median	93.0	90.0	92.3	93.5	88.0	90.0	93.0	88.0	92.0
Mean	91.5	84.2	89.6	92.5	82.7	87.8	91.8	83.4	89.0

*Cities 30,000 to 70,000 population.

†Cities 70,000 to 250,000 population.

TABLE XXI *(Continued)*

THE FUNCTIONS OF SCHOOL ADMINISTRATION: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

Per Cent	SOUTHERN								
	Class I			Class II			Total		
	Cent.	Coör.	Total	Cent.	Coör.	Total	Cent.	Coör.	Total
100	2	..	2	4	2	6	6	2	8
98	1	..	1	..	1	1	1	1	2
97	1	..	1	1	..	1	2	..	2
95	3	..	3	..	1	1	3	1	4
94	1	..	1	..	..	..	1	..	1
93	..	..	..	1	..	1	1	..	1
92	..	..	..	1	..	1	1	..	1
90	..	1	1	2	..	2	2	1	3
89	..	1	1	..	..	..	..	1	1
87	2	..	2	..	..	..	2	..	2
83	2	..	2	..	..	..	2	..	2
81	1	..	1	..	..	..	1	..	1
80	1	..	1	..	..	..	1	..	1
78	1	..	1	..	..	..	1	..	1
75	1	..	1	..	1	1	1	1	2
73	..	..	..	1	..	1	1	..	1
70	..	2	2	..	..	..	..	2	2
68	2	..	2	..	1	1	2	1	3
67	..	1	1	..	..	..	..	1	1
64	..	1	1	..	..	..	..	1	1
58	..	1	1	..	..	..	..	1	1
Total ..	18	7	25	10	6	16	28	13	41
Median	87.0	70.0	83.0	95.0	96.5	96.0	92.3	75.0	90.0
Mean ..	86.9	72.6	82.9	93.5	89.3	91.9	89.3	80.3	86.4

TABLE XXI *(Continued)*

THE FUNCTIONS OF SCHOOL ADMINISTRATION: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

	GREAT LAKES								
Per	Class I			Class II			Total		
Cent	Cent.	Coör.	Total	Cent.	Coör.	Total	Cent.	Coör.	Total
100	8	1	9	3	..	3	11	1	12
98	2	..	2	..	1	1	2	1	3
97	2	..	2	..	..	..	2	..	2
95	2	..	2	..	1	1	2	1	3
94	3	1	4	..	..	..	3	1	4
93	..	..	..	1	..	1	1	..	1
90	5	..	5	..	..	..	5	..	5
89	2	..	2	..	..	..	2	..	2
87	2	1	3	..	..	..	2	1	3
85	2	..	2	..	..	..	2	..	2
82	2	..	2	..	1	1	2	1	3
79	2	..	2	..	..	..	2	..	2
75	..	1	1	..	..	..	..	1	1
73	..	1	1	..	..	..	..	1	1
69	1	..	1	..	..	..	1	..	1
68	..	1	1	..	..	..	..	1	1
67	1	1	2	..	..	..	1	1	2
62	..	1	1	..	..	..	..	1	1
61	..	1	1	..	1	1	..	2	2
59	..	..	..	..	1	1	..	1	1
55	..	..	..	..	1	1	..	1	1
Total ..	34	9	43	4	6	10	38	15	53
Median	92.0	73.0	90.0	100.0	71.5	94.0	94.0	73.0	90.0
Mean ..	90.9	76.3	87.9	98.3	75.0	84.3	91.7	75.8	87.2

TABLE XXI *(Continued)*

THE FUNCTIONS OF SCHOOL ADMINISTRATION: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

	GREAT PLAINS								
Per	Class I			Class II			Total		
Cent	Cent.	Coör.	Total	Cent.	Coör.	Total	Cent.	Coör.	Total
100	1	--	1	2	--	2	3	--	3
98	3	--	3	1	--	1	4	--	4
96	1	--	1	--	--	--	1	--	1
95	--	--	--	--	1	1	--	1	1
93	1	--	1	1	--	1	2	--	2
92	--	--	--	1	--	1	1	--	1
90	--	--	--	--	1	1	--	1	1
88	--	--	--	1	--	1	1	--	1
86	--	1	1	--	--	--	--	1	1
85	--	--	--	--	1	1	--	1	1
83	--	1	1	--	--	--	--	1	1
76	--	1	1	--	--	--	--	1	1
65	--	--	--	--	1	1	--	1	1
63	--	1	1	--	--	--	--	1	1
Total	6	4	10	6	4	10	12	8	20
Median	98.0	79.5	94.5	95.5	87.5	92.5	98.0	84.0	93.0
Mean	97.2	77.0	89.1	95.2	83.8	90.6	96.2	80.4	89.9

TABLE XXI *(Continued)*

THE FUNCTIONS OF SCHOOL ADMINISTRATION: COMPARING CENTRALIZED AND COÖRDINATED SCHOOLS

	WESTERN								
Per	Class I			Class II			Total		
Cent	Cent.	Coör.	Total	Cent.	Coör.	Total	Cent.	Coör.	Total
100	3	--	3	1	--	1	4	--	4
97	1	--	1	--	--	--	1	--	1
96	2	--	2	--	--	--	2	--	2
95	1	--	1	--	--	--	1	--	1
94	--	--	--	1	--	1	1	--	1
82	1	--	1	--	--	--	1	--	1
81	--	--	--	1	--	1	1	--	1
73	--	1	1	--	--	--	--	1	1
70	--	--	--	--	1	1	--	1	1
53	--	1	1	--	--	--	--	1	1
45	--	1	1	--	--	--	--	1	1
Total	8	3	11	3	1	4	11	4	15
Median	96.5	53.0	96.0	94.0	70.0	87.5	96.0	61.5	95.0
Mean	95.8	57.0	85.2	91.7	70.0	86.3	94.6	60.3	85.5

TABLE XXI *(Continued)*

Per Cent	TOTAL		
	Centralized	Coördinated	Cent. and Coör.
100	40	7	47
98	12	3	15
97	6	1	7
96	3	..	3
95	7	3	10
94	7	1	8
93	6	4	10
92	4	1	5
90	15	3	18
89	3	1	4
88	4	3	7
87	4	1	5
86	..	1	1
85	4	1	5
83	3	1	4
82	4	1	5
81	2	..	2
80	1	..	1
79	2	..	2
78	1	..	1
77	1	1	2
76	2	3	5
75	1	3	4
73	1	4	5
72	1	..	1
70	1	4	5
69	1	..	1
68	2	2	4
67	1	3	4
65	..	1	1
64	..	1	1
63	1	1	2
62	..	2	2
61	..	2	2
59	..	1	1
58	..	1	1
56	..	1	1
55	..	1	1
53	..	1	1
51	..	1	1
45	..	1	1
Total	140	66	206
Median	94.0	76.5	92.0
Mean	91.9	79.3	87.8

TABLE XXII

Data of the Functions of School Administration

Geographical Grouping of Cities by States	1	2	3	4	5	6	7	8	9	10	Total
EASTERN											
I—Centralized—37											
Connecticut											
Meriden	8	10	5	5	10	4	10	10	10	10	82
New Britain	10	10	10	10	10	10	10	10	10	10	100
Stamford	10	10	10	....	5	10	10	10	10	10	85
Maine											
Lewiston	8	10	10	10	10	10	10	10	10	10	98
Portland	8	10	5	5	10	7	10	5	10	7	77
Massachusetts											
Brockton	10	10	5	10	10	....	10	10	10	10	85
Brookline	8	10	10	10	10	10	10	10	10	10	98
Chelsea	10	10	10	10	10	....	10	10	10	10	90
Chicopee	10	10	10	10	10	7	10	10	10	10	97
Everett	10	10	10	10	10	3	10	10	10	10	93
Fitchburg	10	10	10	10	10	10	10	10	10	10	100
Haverhill	8	10	10	10	10	4	10	10	10	10	92
Holyoke	10	10	10	10	10	10	....	10	10	10	90
Malden	8	10	10	10	10	....	10	10	10	10	88
Medford	10	10	10	10	10	3	10	10	10	7	90
Newton	10	10	10	10	10	....	10	10	10	10	90
Pittsfield	2	10	5	5	10	....	10	10	10	10	72
Taunton	8	10	10	10	10	4	10	10	10	10	92
Waltham	8	10	10	10	10	10	10	10	10	10	98
New Jersey											
Atlantic City	8	10	5	5	5	10	10	10	10	10	83
New Brunswick	10	10	10	10	10	10	10	10	10	10	100
New York											
Amsterdam	8	10	10	10	10	10	10	10	10	10	98
Auburn	6	10	5	5	10	....	10	10	10	10	76
Binghamton	10	10	10	10	10	10	10	10	10	10	100
Elmira	10	10	10	10	10	10	10	10	10	10	100
Mount Vernon	10	10	10	5	10	10	10	10	10	10	95
Newburgh	6	10	5	5	10	....	10	10	10	10	76
New Rochelle	10	10	10	10	10	10	10	10	10	10	100
Niagara Falls	10	10	10	10	10	10	10	10	10	10	100
Poughkeepsie	10	10	10	10	10	10	....	10	10	10	90
Pennsylvania											
Altoona	10	10	10	10	10	10	10	10	10	10	100
Chester	10	10	10	10	10	10	10	10	10	10	100
Hazelton	10	10	10	10	10	10	10	10	10	10	100
Lancaster	8	10	5	5	5	....	....	10	10	10	63
Norristown	10	10	10	10	10	10	10	10	10	10	100
York	10	10	10	10	10	10	10	10	10	10	100
Rhode Island											
Woonsocket	10	10	10	10	5	4	10	10	10	10	89
I—Coördinated—13											
New Jersey											
East Orange	10	10	10	10	10	10	10	10	10	10	100
Hoboken	10	10	10	10	10	10	10	10	10	10	100
Passaic	8	....	5	10	10	....	10	10	10	10	73
Perth Amboy	8	10	10	10	5	10	10	10	10	10	93
West Hoboken	8	10	10	10	5	10	10	10	10	10	93

TABLE XXII *(Continued)*

DATA OF THE FUNCTIONS OF SCHOOL ADMINISTRATION

Geographical Grouping of Cities by States	1	2	3	4	5	6	7	8	9	10	To-tal
EASTERN											
I—Coördinated											
New York											
Jamestown	8	10	10	10	10	10	....	10	10	10	88
Watertown	10	10	10	10	10	10	10	10	10	10	100
Pennsylvania											
Bethlehem	8	10	5	10	10	10	10	10	10	10	93
Easton	6	....	5	5	10	....	....	10	10	10	56
Johnstown	8	....	5	5	5	7	10	10	10	10	70
McKeesport	6	....	5	5	10	10	10	10	10	10	76
Williamsport	10	10	10	10	10	....	10	10	10	10	90
Rhode Island											
Pawtucket	8	10	5	5	....	4	10	10	....	10	62
II—Centralized—14											
Connecticut											
Bridgeport	8	10	10	5	10	7	10	10	10	10	90
Massachusetts											
Cambridge	10	10	10	10	10	....	10	10	10	10	90
Fall River	8	10	10	10	10	6	10	10	10	10	94
New Bedford	10	10	10	10	10	10	10	10	10	10	100
Somerville	8	10	10	10	10	....	10	10	10	10	88
New Jersey											
Bayonne	10	10	5	....	5	....	10	10	10	10	70
Trenton	10	10	10	10	10	10	10	10	10	10	100
New York											
Albany	10	10	10	10	10	....	10	10	10	10	90
Schenectady	10	10	10	10	10	10	10	10	10	10	100
Troy, Lansing Dist.	8	10	10	10	10	....	10	10	10	10	88
Troy, Union Dist.	10	10	10	10	10	10	10	10	10	10	100
Utica	8	10	5	10	10	10	10	10	10	10	93
Pennsylvania											
Wilkes-Barre	8	10	5	10	10	10	10	10	10	10	93
Rhode Island											
Providence	10	10	10	10	10	10	10	10	10	7	97
II—Coördinated—13											
Connecticut											
Hartford	8	10	10	10	10	....	10	10	10	10	88
New Haven	8	10	5	5	5	....	10	10	10	10	73
Massachusetts											
Lynn	10	10	10	10	10	10	10	10	10	10	100
Springfield	8	10	10	10	10	4	10	10	10	10	92
Worcester	10	10	10	10	10	7	10	10	10	10	97
New Jersey											
Elizabeth	8	10	10	10	10	....	10	10	10	10	88
Paterson	6	....	5	5	5	....	10	10	....	10	51
New York											
Syracuse	8	10	10	10	5	10	10	10	10	10	93
Yonkers	8	....	10	5	5	4	10	5	10	10	67

TABLE XXII *(Continued)*

DATA OF THE FUNCTIONS OF SCHOOL ADMINISTRATION

Geographical Grouping of Cities by States	1	2	3	4	5	6	7	8	9	10	To-tal
EASTERN											
II—Coördinated											
Pennsylvania											
Allentown	6	10	5	5	5	4	10	10	10	10	75
Erie	8	10	5	5	5	4	10	10	10	10	77
Reading	8	10	10	10	10	10	10	10	10	10	98
Scranton	6	10	5	5	10	....	10	10	10	10	76
SOUTHERN											
I—Centralized—18											
Alabama											
Mobile	8	10	5	5	10	....	10	....	10	10	68
Montgomery	10	10	10	10	10	10	7	10	10	10	97
Arkansas											
Little Rock	6	....	5	5	5	7	10	10	10	10	68
Florida											
Pensacola	10	10	10	10	10	10	....	....	10	10	80
Tampa	10	10	10	10	....	10	....	5	10	10	75
Georgia											
Augusta	10	10	5	10	10	10	10	10	10	10	95
Columbus	10	10	10	10	10	10	10	10	10	4	94
Louisiana											
Shreveport	10	10	10	10	10	10	10	5	10	10	95
North Carolina											
Wilmington	10	10	10	10	5	10	10	10	10	10	95
South Carolina											
Charleston	8	10	10	10	10	10	10	10	10	10	98
Tennessee											
Chattanooga	10	10	10	10	10	10	10	10	10	10	100
Texas											
Beaumont	8	10	10	10	10	7	10	5	10	7	87
Waco	6	10	5	....	10	7	10	10	10	10	78
Wichita Falls	6	10	5	10	10	10	10	5	10	7	83
Virginia											
Petersburg	8	10	10	10	10	10	....	5	10	10	83
Portsmouth	6	10	5	5	10	10	10	5	10	10	81
West Virginia											
Charleston	10	10	10	10	10	7	....	10	10	10	87
Huntington	10	10	10	10	10	10	10	10	10	10	100
I—Coördinated—7											
Kentucky											
Covington	8	....	5	5	5	4	10	10	10	10	67
Lexington	8	....	....	10	5	....	10	5	10	10	58
North Carolina											
Winston-Salem	10	10	10	10	5	10	10	10	10	4	89
Texas											
Galveston	8	10	5	10	10	7	10	10	10	10	90
Virginia											
Newport News	8	....	5	5	10	4	10	5	10	7	64
Roanoke	6	10	5	5	10	4	10	....	10	10	70
West Virginia											
Wheeling	10	....	10	10	10	....	10	10	....	10	70

TABLE XXII *(Continued)*

DATA OF THE FUNCTIONS OF SCHOOL ADMINISTRATION

Geographical Grouping of Cities by States	1	2	3	4	5	6	7	8	9	10	Total
SOUTHERN											
II—Centralized—10											
Alabama											
Birmingham	10	10	10	10	10	10	10	10	10	10	100
Delaware											
Wilmington	10	10	10	10	10	....	10	10	10	10	90
Florida											
Jacksonville	10	10	10	10	10	7	10	5	10	10	92
Georgia											
Atlanta	10	10	10	10	10	10	10	10	10	10	100
Savannah	10	10	10	10	10	10	10	10	10	10	100
Tennessee											
Memphis	10	10	10	10	10	7	10	10	10	10	97
Nashville	8	10	10	10	5	10	10	10	10	10	93
Texas											
El Paso	10	10	10	10	10	10	10	10	10	10	100
San Antonio	6	....	10	5	5	7	10	10	10	10	73
Virginia											
Norfolk	10	10	10	10	10	10	....	10	10	10	90
II—Coördinated—6											
Kentucky											
Louisville	10	10	10	10	10	10	10	10	10	10	100
Tennessee											
Knoxville	8	....	5	5	5	10	10	5	10	10	68
Texas											
Dallas	10	10	10	5	10	10	10	10	10	10	95
Fort Worth	8	....	10	10	5	7	10	5	10	10	75
Houston	10	10	10	10	10	10	10	10	10	10	100
Virginia											
Richmond	8	10	10	10	10	10	10	10	10	10	98
GREAT LAKES											
1—*Centralized*—34											
Illinois											
Aurora, East	10	10	10	10	10	10	10	10	10	10	100
Aurora, West	10	10	5	5	10	7	10	10	10	10	87
Cicero	8	10	10	10	10	7	10	10	10	4	89
Danville	10	10	10	10	10	....	10	10	10	10	90
Decatur	10	10	10	10	10	7	10	10	10	10	97
Evanston, D. 75	8	10	10	10	10	10	10	10	....	4	82
Evanston, D. 76	8	10	10	10	10	7	10	10	10	10	95
Joliet	8	10	10	10	10	10	10	10	10	10	98
Moline	8	....	10	10	10	7	10	10	10	10	85
Oak Park	10	10	10	10	10	10	10	10	10	10	100
Quincy	8	10	10	10	5	10	10	10	10	7	90
Rockford	10	10	10	10	10	10	10	10	10	10	100
Rock Island	8	10	10	10	10	10	10	10	10	10	98
Springfield	10	10	10	5	5	4	10	5	10	10	79
Indiana											
Gary	10	10	10	10	10	10	10	10	10	10	100
Hammond	10	10	10	10	10	10	10	10	10	10	100
Kokomo	10	10	10	10	10	10	10	5	10	10	95
Terre Haute	10	10	10	10	10	7	10	10	10	10	97

TABLE XXII *(Continued)*

DATA OF THE FUNCTIONS OF SCHOOL ADMINISTRATION

Geographical Grouping of Cities by States	1	2	3	4	5	6	7	8	9	10	Total
GREAT LAKES											
I—Centralized											
Michigan											
Battle Creek	10	10	5	5	10	10	10	10	10	10	90
Hamtramck	10	10	10	10	10	10	10	10	10	10	100
Highland Park	10	....	10	10	10	10	10	10	10	10	90
Jackson	10	10	10	10	10	10	10	10	10	10	100
Kalamazoo	8	10	5	5	10	7	10	10	10	10	85
Lansing	10	10	10	10	10	....	10	10	10	10	90
Muskegon	10	10	10	10	10	10	10	10	10	10	100
Saginaw, West	10	10	10	10	10	7	10	10	....	10	87
Ohio											
Hamilton	6	10	10	10	10	3	10	10	....	10	79
Lorain	8	....	10	5	10	4	10	10	....	10	67
Springfield	8	10	....	10	10	4	10	10	10	10	82
Wisconsin											
Green Bay	10	10	10	10	10	10	10	10	10	4	94
Kenosha	10	10	10	10	10	10	10	10	10	4	94
La Crosse	8	10	5	5	10	7	....	10	10	4	69
Oshkosh	10	10	5	10	10	10	10	10	10	4	89
Sheboygan	10	10	10	10	10	10	10	10	10	4	94
I—Coördinated—9											
Illinois											
East St. Louis	8	10	10	10	5	4	10	10	10	10	87
Indiana											
East Chicago	10	10	10	10	....	....	10	5	10	10	75
Muncie	10	10	10	10	10	10	10	10	10	10	100
Michigan											
Pontiac	8	10	5	5	....	4	10	5	10	10	67
Saginaw, East	8	10	5	5	5	....	10	10	10	10	73
Ohio											
Lakewood	6	....	5	5	5	4	10	10	10	7	62
Lima	8	....	5	5	10	....	10	10	10	10	68
Wisconsin											
Madison	10	10	10	10	10	10	10	10	10	4	94
Racine	6	....	5	5	10	....	10	5	10	10	61
II—Centralized—4											
Indiana											
Fort Wayne	10	10	10	10	10	10	10	10	10	10	100
South Bend	10	10	10	10	10	10	10	10	10	10	100
Ohio											
Akron	10	10	10	10	10	10	10	10	10	10	100
Dayton	8	10	10	5	10	10	10	10	10	10	93
II—Coördinated—6											
Illinois											
Peoria	8	10	10	10	10	10	10	10	10	10	98
Michigan											
Flint	8	....	10	10	10	4	10	10	10	10	82
Grand Rapids	8	10	10	10	10	7	10	10	10	10	95

TABLE XXII *(Continued)*

DATA OF THE FUNCTIONS OF SCHOOL ADMINISTRATION

Geographical Grouping of Cities by States	1	2	3	4	5	6	7	8	9	10	Total
GREAT LAKES											
II—Coördinated											
Ohio											
Canton	6	....	5	5	5	....	10	10	10	10	61
Toledo	6	....	5	5	10	3	10	10	....	10	59
Youngstown	6	....	5	5	....	4	10	5	10	10	55
GREAT PLAINS											
I—Centralized—6											
Iowa											
Cedar Rapids	6	10	10	10	10	10	10	10	10	10	96
Waterloo, East	8	10	10	10	10	10	10	10	10	10	98
Waterloo, West	8	10	10	10	10	10	10	10	10	10	98
Missouri											
Springfield	8	10	10	10	10	10	10	10	10	10	98
Nebraska											
Lincoln	10	10	10	10	10	10	10	10	10	10	100
Oklahoma											
Muskogee	8	10	10	10	10	10	10	5	10	10	93
I—Coördinated—4											
Iowa											
Council Bluffs	4	10	5	5	5	7	10	10	10	10	76
Davenport	6	10	5	10	5	10	10	10	10	10	86
Dubuque	4	....	5	5	5	4	10	10	10	10	63
Kansas											
Topeka	6	10	5	5	10	7	10	10	10	10	83
II—Centralized—6											
Iowa											
Des Moines	10	10	10	10	10	10	10	10	10	10	100
Sioux City	8	10	10	10	5	10	10	10	10	10	93
Kansas											
Wichita	8	10	10	10	10	10	10	10	10	10	98
Nebraska											
Omaha	8	10	10	10	10	10	....	10	10	10	88
Oklahoma											
Oklahoma City	10	10	10	10	10	10	10	10	10	10	100
Tulsa	10	10	10	10	10	7	10	5	10	10	92
II—Coördinated—4											
Kansas											
Kansas City	8	10	10	10	10	7	10	10	10	10	95
Minnesota											
Duluth	10	....	10	10	10	10	10	10	10	10	90
St. Paul	8	10	5	5	10	7	10	10	10	10	85
Missouri											
St. Joseph	6	....	5	5	5	4	10	10	10	10	65

TABLE XXII *(Continued)*

DATA OF THE FUNCTIONS OF SCHOOL ADMINISTRATION

Geographical Grouping of Cities by States	1	2	3	4	5	6	7	8	9	10	To-tal
WESTERN											
I—Centralized—8											
California											
Berkeley	10	10	10	10	10	7	10	10	10	10	97
Fresno	10	10	10	10	5	10	10	10	10	10	95
Long Beach	8	10	5	5	10	4	10	10	10	10	82
Pasadena	6	10	10	10	10	10	10	10	10	10	96
Sacramento	10	10	10	10	10	10	10	10	10	10	100
San Jose	10	10	10	10	10	10	10	10	10	10	100
Stockton	6	10	10	10	10	10	10	10	10	10	96
Utah											
Ogden	10	10	10	10	10	10	10	10	10	10	100
I—Coördinated—3											
Colorado											
Colorado Springs	6	....	5	5	....	....	10	5	10	4	45
Pueblo	6	....	5	10	5	7	10	10	10	10	73
Montana											
Butte	6	....	5	5	5	....	10	5	10	7	53
II—Centralized—3											
California											
Oakland	10	10	10	10	10	10	10	10	10	10	100
San Diego	10	10	10	10	10	4	10	10	10	10	94
Utah											
Salt Lake City	6	10	5	5	5	10	10	10	10	10	81
II—Coördinated—1											
Washington											
Spokane	8	....	5	5	5	7	10	10	10	10	70